

## **3.3 BIOLOGICAL RESOURCES**

### **3.3.1 INTRODUCTION**

This section describes the terrestrial and aquatic biological resources that are known or have the potential to occur within the Phase 1 SERP coverage area. Biological resources include common vegetation, wildlife, and fisheries resources; sensitive habitats; plant communities; and special-status plant and animal species, all of which are detailed below. Federal, state, regional, and local regulations related to biological resources are summarized. Potential impacts of the SERP are analyzed and mitigation measures are provided for those impacts determined to be significant or potentially significant. Cumulative biological impacts are addressed in Section 5.1, “Cumulative Impacts.”

### **3.3.2 REGULATORY SETTING**

#### **FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS**

##### **Clean Water Act (Section 404)**

USACE regulates discharges of dredged or fill materials into waters of the United States under Section 404 of the CWA. “Waters of the United States” are lakes, rivers, streams, and relatively permanent tributaries and adjacent wetlands. Wetlands are defined in Section 404 as “areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Activities that require a permit under Section 404 include but are not limited to placing fill or riprap, grading, mechanized land clearing, and dredging. Any activity that would result in the deposit of dredged or fill material below the ordinary high-water mark of waters of the United States or within a jurisdictional wetland usually requires a Section 404 permit, even if the area is dry at the time the activity takes place.

##### **Endangered Species Act of 1973, as Amended**

The federal Endangered Species Act (ESA) protects and promotes recovery of threatened and endangered species, many of which are terrestrial and present in the Extended SPA. Under the ESA, the definition of “take” is to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Under federal regulation, take is further defined to include habitat modification or degradation where it would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

The ESA includes the following provisions:

- ▶ Section 4 outlines a process to list species in danger of becoming extinct.
- ▶ Section 7 outlines procedures for cooperation among federal agencies to conserve federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with U.S. Fish and Wildlife Service (USFWS) for terrestrial and nonanadromous fish species, and with the National Marine Fisheries Service (NMFS) for anadromous fish and other marine fish and mammal species, to ensure that federal agencies do not undertake, fund, permit, or authorize actions likely to jeopardize the continued existence of listed species.
- ▶ Section 9 prohibits take of any threatened or endangered species, including harm associated with habitat modifications.
- ▶ Section 10 outlines the use of habitat conservation plans (HCPs) when there is no federal involvement in a project and the project is likely to result in take of listed species.

As defined in the ESA, critical habitat is a specific geographic area that is essential for the conservation of a threatened or endangered species and that may require special management and protection. It may include an area that is not currently occupied by the species but that will be needed for its recovery. Critical habitats are designated to ensure that actions authorized by federal agencies will not destroy or adversely modify critical habitat, thereby protecting areas necessary for the conservation of the species.

### **Fish and Wildlife Coordination Act of 1934, as Amended**

The Fish and Wildlife Coordination Act was enacted in 1934, then amended in 1946, to protect fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. The statute requires federal agencies to consider the effect that water-related projects would have on fish and wildlife resources. The agencies must consult and coordinate with USFWS and state fish and game agencies to address ways to conserve wildlife resources by preventing loss of and damage to fish and wildlife resources, and to further develop and improve these resources.

### **Bald and Golden Eagle Protection Act of 1940**

With the delisting of the bald eagle in 2007, the Bald and Golden Eagle Protection Act is the primary federal law protecting bald eagles. This law prohibits, except under certain specified conditions, the taking, possession, and commerce of bald and golden eagles. The Bald and Golden Eagle Protection Act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb” (16 U.S. Code (USC) 668–668d). USFWS has defined “disturb” under the act as follows (72 FR 31132–31140, June 5, 2007):

*Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.*

In addition to immediate effects, this definition of “disturb” covers effects caused by human-induced alterations around a previously used nest site when bald or golden eagles are not present. Thus, an eagle has been disturbed if such an alteration sufficiently agitates or bothers a returning eagle to injure it or substantially interfere with normal breeding, feeding, or sheltering habits, and to cause (or be likely to cause) loss of productivity or nest abandonment. USFWS has proposed new permit regulations to authorize the take of bald and golden eagles under the Bald and Golden Eagle Protection Act, generally when the take to be authorized is associated with otherwise lawful activities (72 FR 31141–31155, June 5, 2007).

### **Migratory Bird Treaty Act**

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703–711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 Code of Federal Regulations (CFR) Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Both direct and indirect actions are prohibited, although harassment and habitat modifications are not prohibited unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA, which can be found in 50 CFR 10.13, includes several hundred species, essentially all native birds. Loss of nonnative species, such as house sparrows, European starlings, and rock pigeons, is not covered by this statute.

### **Sustainable Fisheries Act (Essential Fish Habitat)**

In response to growing concern about the status of fisheries in the United States, Congress passed the Sustainable Fisheries Act of 1996 (Public Law 104-297). This law amended the Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265), the primary law governing marine fisheries management in the federal waters of the United States. Under the Sustainable Fisheries Act, consultation is required by NMFS on any activity that might adversely affect Essential Fish Habitat (EFH). EFH consists of those habitats that fish rely on throughout their life cycles. It encompasses habitats necessary to allow sufficient production of commercially valuable aquatic species to support a long-term sustainable fishery and contribute to a healthy ecosystem.

## Executive Orders

The executive orders discussed below were issued to provide direction to federal agencies regarding invasive species, floodplain management, and protection of wetlands, and affect related federal flood management actions.

- ▶ **Executive Order 13112: Invasive Species**—This executive order directs federal agencies to prevent and control introductions of invasive nonnative species in a cost-effective and environmentally sound manner to minimize their economic, ecological, and human health impacts. As directed by Executive Order 13112, a national invasive species management plan guides federal actions to prevent, control, and minimize invasive species and their impacts (NISC 2008). To support implementation of this plan, the U.S. Army Corps of Engineers (USACE) released the *U.S. Army Corps of Engineers Invasive Species Policy* (USACE 2009). This policy calls on agencies to address the effects of invasive species in impact analyses completed for civil works projects.
- ▶ **Executive Order 11988: Floodplain Management**—This executive order requires federal agencies to provide leadership and take action to avoid development in the base (100-year) floodplain; reduce the hazards and risk associated with floods; minimize the effect of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values of the base floodplain.
- ▶ **Executive Order 11990: Protection of Wetlands**—This executive order directs federal agencies to provide leadership and act to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in implementing civil works.

## STATE PLANS, POLICIES, REGULATIONS, AND LAWS

### Section 401 Water Quality Certification and Porter-Cologne Water Quality Control Act

See Subsection 3.6.2, “Regulatory Setting,” in Section 3.6, “Hydrology and Water Quality.”

### California Endangered Species Act

Under the California Endangered Species Act (CESA), the California Department of Fish and Wildlife (CDFW) has the responsibility for maintaining a list of endangered and threatened species (California Fish and Game Code, Section 2070). In addition, CDFW maintains a list of “candidate species,” for which it has issued formal notice that the species are under review for possible addition to the list of endangered or threatened species. CDFW also maintains lists of “species of special concern,” which serve as species watch lists.

Pursuant to CESA requirements, an agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present in the project study area and, if so, whether the proposed project would have a potentially significant impact on any of these species. CDFW also encourages informal consultation on any proposed project that may affect a species that is a candidate for State listing.

Take of protected species incidental to otherwise lawful management activities may be authorized through issuance of either an incidental take permit under Section 2081 of the California Fish and Game Code, or a consistency determination under Section 2080.1(a). Section 2080.1(a) authorizes CDFW to accept a federal biological opinion as the take authorization for a State-listed species when a species is listed under both the ESA and the CESA. Under the CESA, “take” is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include “harm” or “harass,” as the federal act does.

### **California Fish and Game Code Sections 1600–1616—Streambed Alteration Agreement**

Diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports fish or wildlife resources are subject to regulation by CDFW, as required by Sections 1600–1616 of the California Fish and Game Code. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports wildlife, fish, or other aquatic life. This includes watercourses that have a surface or subsurface flow that supports or has supported riparian vegetation. CDFW’s jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. A CDFW streambed alteration agreement must be obtained for a project that would result in an impact on a river, stream, or lake.

### **California Fish and Game Code Sections 1900–1913—Native Plant Protection Act**

Sections 1900–1913 of the California Fish and Game Code codify the Native Plant Protection Act, which is intended to preserve, protect, and enhance endangered or rare native plants in California. The act directs CDFW to establish criteria for determining which native plants are rare or endangered. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. Under the act, the California Fish and Game Commission may adopt regulations governing the taking, possessing, propagation, or sale of any endangered or rare native plant.

With CDFW participation, CNPS has developed and maintains lists of plants of special concern in California. See the discussion of “California Department of Fish and Wildlife Species Designations” below for more information on CDFW and CNPS coordination.

## **Sections 3503 and 3513 of the California Fish and Game Code—Protection of Birds of Prey**

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (birds in the order of Falconiformes or Strigiformes [birds of prey—i.e., eagles, hawks, owls, and falcons]), including their nests or eggs. Section 3513 provides for adoption of the MBTA's provisions. It states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird. These state codes offer no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of nongame, migratory birds. Typical violations include destruction of active raptor nests resulting from removal of vegetation in which the nests are located. Violation of Sections 3503.5 and 3513 could also include disturbance of nesting pairs that results in failure of an active raptor nest.

## **California Fish and Game Code—Fully Protected Species**

Protection of fully protected species is described in four sections of the California Fish and Game Code (Sections 3511, 4700, 5050, and 5515) that list 37 fully protected species. These statutes prohibit take or possession at any time of fully protected species.

## **California Department of Fish and Wildlife Species Designations**

CDFW maintains an informal list of species called “species of special concern.” These are broadly defined as wildlife species that are of concern to CDFW because their populations have declined and distributions have become restricted, and/or because they are associated with habitats that are declining in California. These species are inventoried in the CNDDDB regardless of their legal status. Impacts on species of special concern may be considered significant.

CDFW also maintains a list of sensitive plant species. California native plants meeting the rarity or endangerment criteria are assigned a California Rare Plant Rank and inventoried in the CNDDDB. CDFW and CNPS assign California Rare Plant Ranks through the collaborative efforts of the Rare Plant Status Review Group composed of more than 300 botanical experts from government, academia, nongovernmental organizations, and the private sector. Species with a California Rare Plant Rank of 1A, 1B, or 2 (formerly known as CNPS Lists 1A, 1B, and 2) generally qualify as endangered, rare, or threatened within the definition of the CEQA Guidelines (California Code of Regulations, Section 15380). In general, species with a California Rare Plant Rank of 3 or 4 do not meet the definition of endangered, rare, or threatened pursuant to CEQA Section 15380; however, these species may be evaluated by the lead agency on a case-by-case basis to determine significance criteria under CEQA.

## **LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES**

### **Habitat Conservation Plans and Natural Community Conservation Plans**

Regional HCPs and natural community conservation plans (NCCPs) are currently being developed for various counties in the Phase 1 SERP coverage area. These plans integrate land-use activities with conservation goals to reduce conflicts between sensitive species and economic development. They also create a regional, multispecies approach to planning for the protection and perpetuation of biological diversity.

### **General Plans**

County and city general plans set forth the long-term goals, objectives, and policies that guide local land use decisions, including decisions about development and preservation of natural resources. Often, specific policies or ordinances, such as tree preservation ordinances, are aimed at protecting the biological resources that are considered locally important. Policies related to biological resources are usually found in the agriculture, open space, conservation, and natural resources elements of general plans. These policies often provide general guidance for avoiding and minimizing impacts on these resources when engaging in ground-disturbing activities associated with development.

### **Sacramento River Watershed Program**

The Sacramento River Watershed Program (SRWP), founded in 1996, brings together dozens of groups and thousands of people who are concerned about the health of the Sacramento River and its watershed. As one of the largest watersheds in the United States, the Sacramento River watershed serves as an important source of drinking water and recreation, as well as a vital economic artery for commerce and agriculture. Therefore, preserving and maintaining the water quality of the Sacramento River watershed is crucial. The program is overseen by a 21-member board of trustees and functions through several committees and work groups.

The program provides a network for building a basinwide context to improve watershed health. It operates through consensus-based collaborative partnerships, coordination of research and monitoring, and mutual education among the stakeholders of the Sacramento River watershed. The SRWP works to support and preserve the integrity of local efforts. The program strives to resolve watershed issues with local participation and a watershed-wide perspective. The SRWP also helps disseminate information about the watershed and conducts monitoring activities to continually assess water quality and other indicators of watershed health.

### 3.3.3 ENVIRONMENTAL SETTING

The following sections describe the vegetation types, primary terrestrial and aquatic habitat functions, and sensitive biological resources present in the Phase 1 SERP coverage area. Because the Phase 1 SERP coverage area encompasses approximately 300 miles of levees, the area has been divided into regions to assist DWR and the SERP permitting agencies in identifying general conservation measures and timing restrictions to protect various species (see Section I, "Conservation Measures," in the SERP Manual, included in Appendix B of this DEIR). These regions, referred to below in the discussions of wildlife occurrence, are defined as follows:

Region 1: Delta-Sacramento River and major tributaries (River Mile [RM] 0 to RM 60)

- ▶ Major tributaries include:
  - Putah Creek
  - Sacramento Bypass
  - Sacramento River (portions below RM 60)
  - Yolo Bypass as identified in Exhibit 2-1

Region 2: Mainstem Sacramento River and major tributaries RM 60 to RM 143

- ▶ Major tributaries include:
  - Butte Creek
  - Cherokee Canal
  - Colusa Bypass
  - Colusa Main Drain (northern portion as identified in Exhibit 2-1)
  - Feather River (portions as identified in Exhibit 2-1)
  - Sacramento River (portions between RM 60 and RM 143)
  - Sutter Bypass
  - Tisdale Bypass
  - Wadsworth Canal
  - East and West Interceptor Canals

Region 3: Upper Sacramento and major tributaries (RM 143 to RM 194)

- ▶ Major tributaries include:
  - Sacramento River (portions between RM 143 and RM 194)



Region 4: Non-anadromous SERP waterways, including:

- Willow Slough Bypass
- Cache Creek from the Yolo Bypass to the upstream limit of the SRFCP levees

## VEGETATION TYPES

Seven categories of vegetation cover, as listed below, are used to describe the existing vegetation in the Phase 1 SERP coverage area. These categories are based on a simplified classification of 12 plant community types delineated in the Phase 1 SERP coverage area by the Sacramento River Riparian Vegetation (SRRV) Project (Nelson et al. 2000). Two other vegetation types, Agricultural Lands and Ruderal Vegetation, have been added to the original SRRV classes. The area that has been classified includes lands between the high-water channel edge (the line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, or the presence of litter and debris) and the levee crest and a 100-foot buffer along the high-water channel edge (for areas with no levees).

### Riparian Forest

This category of vegetation cover includes the Great Valley cottonwood riparian forest, Great Valley mixed riparian forest, young cottonwood forest, and valley oak forest plant community types delineated in the SRRV Project (Nelson et al. 2000). Riparian forest habitat is composed of mature native and nonnative trees. Trees and shrubs are interspersed, with heights ranging from a few feet to almost 100 feet above the ground or shoreline. Vegetation in a riparian forest provides habitat with overhead and instream shaded riverine aquatic (SRA) cover (detailed below under “Fisheries and Aquatic Habitats”) for aquatic species. The riparian forest along the Sacramento River consists primarily of a tall overstory of deciduous broadleaf trees, with Fremont cottonwood (*Populus fremontii*) and valley oak (*Quercus lobata*) being the most prevalent species; these species are often covered with California wild grape (*Vitis californica*) and Colorado Desert mistletoe (*Phoradendron macrophyllum*). Nonnative riparian forest species also contribute to the overstory composition in many areas. The most prevalent nonnatives are blue gum (*Eucalyptus* spp.), black locust (*Robinia pseudoacacia*), and English walnut (*Juglans regia*). Shrub species present in the understory of the riparian forest habitat can include native and nonnative species such as California and Himalayan blackberry (*Rubus ursinus* and *R. discolor*), California rose (*Rosa californica*), Pacific poison oak (*Toxicodendron diversilobum*), common buttonbush (*Cephalanthus occidentalis* var. *californicus*), and blue elderberry (*Sambucus mexicana*). Elderberry is a species of concern because it is a host plant for the Valley elderberry longhorn beetle, which is listed as threatened under the ESA. Elderberry is usually found along the upper elevations of the floodplain.

## Riparian Scrub/Shrub

This category of vegetation cover includes areas delineated by the SRRV Project as blackberry scrub and Great Valley riparian scrub (Nelson et al. 2000). The riparian scrub/shrub vegetation cover primarily occurs at low-bank and mid-bank elevations and consists of shrub species and riparian tree species that are less than 20 feet tall. Species composition of the riparian scrub/shrub community is similar to that described above for riparian forest.

## Riparian Herbaceous

This vegetation cover type includes herbaceous cover and the gravel and sand bar community types delineated in the SRRV Project (Nelson et al. 2000). Areas were designated riparian herbaceous cover only if they were enclosed by riparian vegetation or the stream channel. The gravel and sand bar community type is included in this grouping because these areas support annual and short-lived perennial species, including herbs, grasses, and sub-shrubs that cover less than 50 percent of a given area (Nelson et al. 2000).

The riparian herbaceous vegetation cover type occurs on the waterside of the levees, within gaps in the riparian forest canopy and riparian scrub/shrub communities, at mid-bank and high-bank elevations, and on sand and gravel bars. The riparian herbaceous vegetation cover exists primarily in areas with frequent natural or human-induced disturbance; consequently, the species composition is a mix of native and nonnative plants. Species commonly found in the herbaceous riparian communities include European annual and native perennial grasses; other native perennials such as Douglas' sagewort (*Artemisia douglasiana*), Santa Barbara sedge (*Carex barbara*), smooth horsetail (*Equisetum laevigatum*), California pea (*Lathyrus jepsonii* var. *californicus*), and cudweed (*Gnaphalium* sp.); nonnative forbs and grasses such as garden asparagus and Bermuda grass (*Cynodon dactylon*); and invasive plants such as yellow star-thistle (*Centaurea solstitialis*). Monospecific stands of the invasive giant reed (*Arundo donax*) are also included in this category for vegetation cover.

## Emergent Marsh

This category of vegetation cover includes valley freshwater marsh and common reed, which are plant community types delineated in the SRRV Project (Nelson et al. 2000). Emergent marsh includes valley freshwater marsh that is dominated by cattails (*Typha* spp.) and tule (*Scirpus* spp.) with some sedge or associated broad-leaved aquatic species such as blue vervain (*Verbena hastata*). Common reed (*Phragmites australis*) can grow in inundated areas and forms monocultures along the channel edge. Emergent aquatic vegetation provides refuge for several special-status fish species from predatory fish as well as a base for food production.

## **Agricultural**

Areas within the levee lines that are in active agricultural production, such as alfalfa and rice fields and orchards, are classified as agricultural. Agricultural lands include laneways and hedgerows that provide habitat for various edge species such as hawks, rabbits, mice, ground squirrels, and red foxes.

## **Ruderal Vegetation**

Ruderal vegetation includes areas with sparse to moderate herbaceous plant cover that is likely dominated by weedy upland species such as star-thistle, ox tongue (*Picris echioides*), dandelion (*Taraxacum officinale*), and various European grasses.

## **Bare Ground**

Areas within the levee boundaries are classified as bare ground if they appear to be disturbed and devoid of vegetation. Areas that are undergoing “major disturbance” and are “completely devoid of vegetation” or have very little vegetation are included in this category (Nelson et al. 2000).

## **WILDLIFE**

In general, the Phase 1 SERP coverage area includes levees with a variety of vegetation and habitat conditions as described above. Adjacent waterways are also included in the Phase 1 SERP coverage area. While individual erosion sites could provide suitable habitat for some species, most wildlife would use the less-degraded habitat near the erosion sites. Riparian forest, oak woodland, orchard, and riparian scrub communities provide wildlife with dispersal and migration corridors and foraging, cover, nesting, and breeding habitat (including shade and cover for fish and other aquatic species). Many species of amphibians, reptiles, birds, and mammals are known to use riparian habitats and other woody vegetation communities located near watercourses.

Species that are expected to commonly occur in these habitats near erosion sites in the Phase 1 SERP coverage area include the Pacific treefrog (*Pseudacris regilla*), western fence lizard (*Sceloporus occidentalis*), western scrub-jay (*Aphelocoma californica*), red-shouldered hawk (*Buteo lineatus*), Nuttall's woodpecker (*Picoides nuttallii*), California towhee (*Pipilo crissalis*), spotted towhee (*Pipilo maculatus*), black phoebe (*Sayornis nigricans*), mourning dove (*Zenaidura macroura*), beaver (*Castor canadensis*), Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), blacktailed deer (*Odocoileus hemionus*), and raccoon (*Procyon lotor*). Despite a lack of native plant species richness and complexity, ruderal vegetation habitats provide wildlife species with food resources (e.g., seeds from annual grasses and forbs) and foraging, cover, and breeding opportunities. Species commonly occurring within ruderal habitats include the western fence lizard, mourning dove, red-tailed

hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), black-tailed hare (*Lepus californicus*), deer mouse (*Peromyscus maniculatus*), California ground squirrel (*Spermophilus beecheyi*), and pocket gopher (*Thomomys bottae*).

Open-water habitat provides foraging, cover, reproductive sites, and drinking water for a variety of wildlife species. Western toads (*Bufo boreas*) and Pacific treefrogs use open water and emergent vegetation along riverbanks for reproduction and foraging. Western pond turtles (*Actinemys marmorata*) and western aquatic garter snakes (*Thamnophis couchii*) use woody debris and boulders for basking and refuge. Many species of birds, including herons, waterfowl, and insectivorous birds, use open-water habitats for foraging and resting. Common bird species include the great blue heron (*Ardea herodias*), great egret (*Ardea alba*), common merganser (*Mergus merganser*), double-crested cormorant (*Phalacrocorax auritus*), mallard (*Anas platyrhynchos*), cinnamon teal (*Anas cyanoptera*), Canada goose (*Branta canadensis*), belted kingfisher (*Megaceryle alcyon*), black phoebe (*Sayornis nigricans*), and osprey (*Pandion haliaetus*). Open-water habitat also provides resources for many species of mammals. Several species of bats forage for insects over open water, black-tailed deer and other terrestrial wildlife drink from rivers and streams, and raccoons forage and wash food in nearshore areas. Aquatic and semiaquatic mammals that use open-water habitats include sea lions (in lower reaches of the Sacramento and American rivers), beaver, river otter (*Lutra canadensis*), mink (*Mustela vison*), and muskrat (*Ondatra zibethicus*).

## FISHERIES AND AQUATIC HABITATS

Primary open-water habitats within the Phase 1 SERP coverage area include the active channels of the Sacramento River, Feather River, American River, Cache Creek, Deer Creek, and Sutter Bypass. These watercourses provide multiple habitat functions for a diverse assemblage of native and nonnative fish species. Native fish species that may occur in the open-water habitats adjacent to potential erosion sites include Chinook salmon (*Oncorhynchusshawytscha*), steelhead (*Oncorhynchus mykiss*), river lamprey (*Lampetra ayresii*), green sturgeon (*Acipenser medirostris*), delta smelt (*Hypomesus transpacificus*), hardhead (*Mylopharodon conocephalus*), Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento splittail (*Pogonichthys macrolepidotus*), longfin smelt (*Spirinchus thaleichthys*), California roach (*Lavinia symmetricus*), hitch (*Lavinia exilicauda*), Sacramento blackfish (*Orthodon microlepidotus*), and Sacramento sucker (*Catostomus occidentalis*). Nonnative fish species that may occur in the open-water habitats include mosquitofish (*Gambusia affinis*), striped bass (*Morone saxatilis*), American shad (*Alosa sapidissima*), largemouth bass (*Micropterus salmoides*), green sunfish (*Lepomis cyanellus*), bluegill (*Lepomis macrochirus*), white catfish (*Ameiurus catus*), channel catfish (*Ictalurus punctatus*), and carp (*Cyprinus carpio*). Many of the nonnative fish species are more tolerant of warm water, low dissolved oxygen, and disturbed environments than native species (Moyle 2002).

The use of different waterways and river reaches by various fish species is influenced by variations in habitat conditions and by the habitat requirements, life history, and daily and seasonal movements and behavior of each species. Importantly, altered flow regimes, flood management, and bank protection efforts throughout much of the Central Valley have isolated channels from their floodplains and have reduced available sediment transport, channel migration and avulsion, large woody debris recruitment, and SRA habitat.

SRA vegetation and instream tree and shrub debris provide important riverine fish habitat. SRA habitat is defined as the nearshore aquatic habitat occurring at the interface between a river and adjacent woody riparian habitat. The principal attributes of this cover type are an adjacent bank composed of natural, eroding substrates supporting riparian vegetation that either overhangs or protrudes into the water, and water that contains variable amounts of woody debris, such as leaves, logs, branches, and roots and has variable depths, velocities, and currents. Riparian habitat provides structure (through SRA habitat) and food for fish species. Shade decreases water temperatures, while low overhanging branches can provide sources of food by attracting terrestrial insects. As riparian areas mature, the vegetation sloughs off into the rivers, creating structurally complex habitat that furnishes refugia from predators, creates variable water velocities, and provides habitat for aquatic invertebrates. For these reasons, many fish species are attracted to SRA habitat.

Historically, seasonal flooding covered various lands adjacent to the river and provided important spawning and rearing habitat for many fish species, including Sacramento splittail and juvenile Chinook salmon and steelhead. Levees have reduced the overall amount of seasonal flooding and shallow-water habitat in the Central Valley river systems. In winter, however, some agricultural fields are allowed to flood (e.g., the Butte Basin, Yolo Bypass, and Sutter Bypass) during high flows and are used by Sacramento splittail for spawning and rearing and by Chinook salmon and steelhead for rearing.

## **SENSITIVE BIOLOGICAL RESOURCES**

Sensitive biological resources addressed in this section include those that are afforded consideration or protection under CEQA, the California Fish and Game Code, CESA, ESA, CWA, and the Porter-Cologne Act.

### **Special-Status Species**

Lists of known and potentially occurring special-status species were developed through review of biological studies previously conducted in the Phase 1 SERP coverage area, USFWS Sacramento office's species lists, and specific information from CNDDDB (CNDDDB 2012) and California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2012) on previously documented occurrences of special-status species in the U.S. Geological Survey quadrangles that contain the Phase 1 SERP coverage area plus a 5-mile-buffer study area.

## Special-Status Plants

CNDDDB and CNPS contain records for 77 special-status plant species in the wider study area. Forty-two of these species have the potential to occur within the Phase 1 SERP coverage project area and their regulatory status, habitat, blooming period, and potential for occurrence are discussed in Table 3.3-1. Of these species, seven have moderate to high potential to occur in the Phase 1 SERP coverage area (Woolly rose-mallow, Sanford's arrowhead, Bristly sedge, Delta tule pea, Suisun Marsh aster, and Brazilian watermeal) and 35 have a low potential to occur or are not expected to occur. This determination was based on the types, extent, and quality of habitats in the study area; the proximity of the Phase 1 SERP coverage area to known extant occurrences of the species; and the species regional distribution and abundance. No state-listed or federally listed plant species were identified as being likely to occur in the Phase 1 SERP coverage area, although one species that is state listed as rare, Mason's lilaeopsis, has low potential to occur.

Species with low potential are not likely to be found in the Phase 1 SERP coverage area because, even though some elements of their required habitat are present and occurrences are nearby, specific microhabitat components are lacking in the Phase 1 SERP coverage area. The remaining 35 species are not expected to occur in the Phase 1 SERP coverage area because they are restricted to soils or habitat types that do not exist in the Phase 1 SERP coverage area and are discussed in Table 3.3-2.

## Special-Status Fish and Wildlife

The preliminary data review identified 57 special-status wildlife species and 10 special-status fish species that could occur in or near the Phase 1 SERP coverage area. Of these 67 species, 47 are not expected to occur or have a low potential to occur and 20 (10 fish species and 10 wildlife species) have a moderate to high likelihood to occur or are known to occur in the Phase 1 SERP coverage area. This determination was based primarily on the types, extent, and quality of habitats in the wider study area (Phase 1 SERP coverage area with 5-mile buffer area); the proximity of the Phase 1 SERP coverage area to known extant occurrences of the species; and the regional distribution and abundance of the species.

Table 3.3-3 summarizes the potential for occurrence of each special-status fish and wildlife species that was evaluated during this analysis. The 10 fish species with a moderate to high potential to occur or that are known to occur in the Phase 1 SERP coverage area include Central Valley steelhead, Central Valley spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, Central Valley fall-/late fall-run Chinook salmon, green sturgeon, delta smelt, longfin smelt, river lamprey, hardhead, and Sacramento splittail. The 10 wildlife species with a moderate to high potential to occur or that are known to occur in the Phase 1 SERP coverage area include Valley elderberry longhorn beetle, western pond turtle, giant garter

Table 3.3-1 Special-Status Plant Species Known to Occur or with Potential to Occur in the Phase I SERP Coverage Area					
Species	Status <sup>1</sup>			Habitat and Blooming Period	Potential for Occurrence <sup>2</sup>
	USFWS	CDFW	CNPS Other		
Ferris' milk-vetch <i>Astragalus tener</i> var. <i>ferrisiae</i>	—	—	1B.1	Vernally mesic grassland habitats, meadows and seeps, subalkaline flats; usually in dry, clay soils in overflow terraces; 15 to 250 feet elevation; blooms April–May	<b>Low potential to occur.</b> Habitat within the Phase 1 SERP coverage area is marginal at best. Species has been found in floodplain rice fields and irrigated pastures along the Sacramento River, including at the Sacramento River National Wildlife Refuge Llano Seco Unit.
Subtle orache <i>Atriplex subtilis</i>	—	—	1B.2	Valley and <b>foothill</b> grassland in sandy alkaline soils; 130 to 330 feet elevation; blooms June–August (rarely to October)	<b>Not expected to occur.</b> Although CNPS lists this as a unique species, it is now considered indistinct from <i>Atriplex miniscula</i> . No suitable habitat is present in the Phase 1 SERP coverage area and species distribution is primarily in the San Joaquin Valley.
Big-scale balsamroot <i>Balsamorhiza</i>	—	—	1B.2	Chaparral, cismontane woodland, valley and foothill grassland, sometimes in serpentinite soils; 295 to 5,100 feet elevation; blooms March–June	<b>Not expected to occur.</b> No suitable habitat is present in the Phase 1 SERP coverage area.

<p><b>Table 3.3-1</b> <b>Special-Status Plant Species Known to Occur or with Potential to Occur in the Phase I SERP Coverage Area</b></p>					
Species	Status <sup>1</sup>			Habitat and Blooming Period	Potential for Occurrence <sup>2</sup>
	USFWS	CDFW	CNPS Other		
Big tarplant <i>Blepharizonia plumosa</i>	—	—	1B.1	Valley and foothill grassland, dry hills and plains; 50 to 1,500 feet elevation; blooms July–October	<b>Not expected to occur.</b> No suitable habitat is present in the Phase 1 SERP coverage area. The nearest known occurrences are from the Antioch and Pittsburg areas, far south of the Phase 1 coverage area, and these occurrences have not been seen since 1937. Species distribution is primarily restricted to the San Francisco Bay area, San Joaquin Valley, and southern Coast Ranges.
Watershield <i>Brasenia schreberi</i>	—	—	2.3	Freshwater marshes and swamps; 98 to 7,200 feet elevation; blooms June–September	<b>Low potential to occur.</b> Suitable habitat may be present but the nearest documented occurrences are presumed extirpated.
Round-leaved filaree <i>California macrophylla</i>	—	—	1B.1	Clay soils in valley and foothill grassland; 50 to 4,000 feet elevation; blooms March–May	<b>Not expected to occur.</b> No suitable grassland habitat is present within the Phase 1 SERP coverage area.



Table 3.3-1 Special-Status Plant Species Known to Occur or with Potential to Occur in the Phase I SERP Coverage Area					
Species	Status <sup>1</sup>			Habitat and Blooming Period	Potential for Occurrence <sup>2</sup>
	USFWS	CDFW	CNPS Other		
Flagella-like atractylocarpus <i>Campylopodiella</i>	—	—	2.2	Cismontane woodland; 330 to 1,640 feet elevation	<b>Not expected to occur.</b> No suitable woodland habitat is present within the Phase 1 SERP coverage area.
Bristly sedge <i>Carex comosa</i>	—	—	2.1	Freshwater marsh; elevations below sea level to 3,000 feet; blooms May–September	<b>Moderate potential to occur.</b> Suitable habitat may be present; there is a record of this species near Snodgrass Slough near the Phase 1 SERP coverage area.
Pappose tarplant <i>Centromadia</i> <i>parryi</i> ssp. <i>parryi</i>	—	—	1B.2	Coastal salt marshes, meadows and seeps, or vernal wet, often alkaline sites in chaparral, coastal prairie, and valley and foothill grassland; 5 to 1,400 feet elevation; blooms May–November	<b>Not expected to occur.</b> No suitable habitat is present in the Phase 1 SERP coverage area for this species.

**Table 3.3-1  
Special-Status Plant Species Known to Occur or with Potential to Occur in the  
Phase I SERP Coverage Area**

Species	Status <sup>1</sup>			Habitat and Blooming Period	Potential for Occurrence <sup>2</sup>
	USFWS	CDFW	CNPS Other		
Stony Creek spurge <i>Chamaesyce ocellata</i> ssp. <i>rattanii</i>	—	—	1B.2	Chaparral, sandy or rocky soils in valley and foothill grassland; 280 to 2,600 feet elevation; blooms May–October	<b>Not expected to occur.</b> No suitable chaparral or grassland habitat is present within the Phase 1 SERP coverage area.
Bolander's water- hemlock <i>Cicuta maculata</i> var. <i>bolanderi</i>	—	—	2.1	Coastal, freshwater, or brackish marshes; 0 to 700 feet elevation; blooms July–September	<b>Low potential to occur.</b> Suitable habitat may be present but the nearest documented occurrences are near Collinsville and Calhoun Cut Slough in the Delta.
Brandegees's clarkia <i>Clarkia biloba</i> ssp. <i>brandegeae</i>	—	—	1B.2	Chaparral and cismontane woodland, often in road cuts; 700 to 3,000 feet elevation; blooms May–July	<b>Not expected to occur.</b> No suitable chaparral or woodland habitat is present within the Phase 1 SERP coverage area and this species is typically found at higher elevations than the coverage area.
White-stemmed clarkia <i>Clarkia gracilis</i> ssp. <i>albicaulis</i>	—	—	1B.2	Chaparral and cismontane woodland, sometimes on serpentine soils; 800 to 3,560 feet elevation; blooms May–July	<b>Not expected to occur.</b> No suitable chaparral or woodland habitat is present within the Phase 1 SERP coverage area.
Silky cryptantha <i>Cryptantha crinita</i>	—	—	1B.2	Gravelly stream beds in cismontane woodland, lower montane coniferous forest, riparian forest, riparian woodland, and valley and foothill grassland; 200 to 4,000 feet elevation; blooms April–May	<b>Not expected to occur.</b> Suitable habitat within the Phase 1 SERP coverage area is extremely limited. Species is known only from Shasta and Tehama counties. The nearest known occurrence record is from Singer Creek in Tehama County.

Table 3.3-1 Special-Status Plant Species Known to Occur or with Potential to Occur in the Phase I SERP Coverage Area					
Species	Status <sup>1</sup>			Habitat and Blooming Period	Potential for Occurrence <sup>2</sup>
	USFWS	CDFW	CNPS Other		
Hoover's cryptantha <i>Cryptantha hooveri</i>	—	—	1A	Inland dunes and sandy substrates in valley and foothill grasslands; 30 to 70 feet elevation; blooms April–May	<b>Not expected to occur.</b> This species is typically associated with dune habitats that are not present in the Phase 1 SERP coverage area. The nearest known records of this species are from Contra Costa County near Antioch and the species is believed to be extirpated.
Peruvian dodder <i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	—	—	2.2	Freshwater marshes and swamps; 50 to 920 feet elevation; blooms July–October	<b>Low potential to occur.</b> Suitable habitat may be present but the nearest documented occurrences are very old or uncertain.
Recurved larkspur <i>Delphinium recurvatum</i>	—	—	1B.2	Alkaline soils in chenopod scrub, cismontane woodland, and valley and foothill grassland; 10 to 2,500 feet elevation; blooms March–June	<b>Not expected to occur.</b> No suitable scrub, woodland, or grassland habitat is present in the Phase 1 SERP coverage area.
Norris' beard moss <i>Didymodon norrisii</i>	—	—	2.2	Intermittently mesic and rocky areas in cismontane woodland and lower montane coniferous forest; 1,970 to 6,500 feet elevation	<b>Not expected to occur.</b> No suitable habitat is present in the Phase 1 SERP coverage area.
Mt. Diablo buckwheat <i>Eriogonum truncatum</i>	—	—	1B.1	Sandy soils in chaparral, coastal scrub, and valley and foothill grassland; 300 to 1,200 feet elevation; blooms April–September	<b>Not expected to occur.</b> No suitable habitat is present in the Phase 1 SERP coverage area and this species is currently known only from Mt. Diablo where it was rediscovered in 2005. All other documented occurrences are believed to be extirpated.

**Table 3.3-1  
Special-Status Plant Species Known to Occur or with Potential to Occur in the  
Phase I SERP Coverage Area**

Species	Status <sup>1</sup>			Habitat and Blooming Period	Potential for Occurrence <sup>2</sup>
	USFWS	CDFW	CNPS Other		
Diamond-petaled California poppy <i>Eschscholzia rhombipetala</i>	–	–	1B.1	Alkaline, clay substrates in valley and foothill grassland; 0 to 3,000 feet elevation; blooms March–April	<b>Not expected to occur.</b> No suitable habitat is present in the Phase 1 SERP coverage area and the species' range is restricted to the San Francisco Bay area and San Joaquin Valley. The nearest documented occurrence is from the Antioch area where it has not been seen since 1889 and is possibly extirpated.
Fragrant fritillary <i>Fritillaria liliacea</i>	–	–	1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland; often on serpentine soils but not restricted to them; 10 to 1,400 feet elevation; blooms February–April	<b>Not expected to occur.</b> No suitable scrub, woodland, or grassland habitat is present in the Phase 1 SERP coverage area.
Adobe lily <i>Fritillaria pluriflora</i>	–	–	1B.2	Chaparral, cismontane woodland, valley and foothill grassland; often in adobe clay soils, sometimes on serpentine soils; 180 to 2,300 feet elevation; blooms February–April	<b>Not expected to occur.</b> No suitable chaparral, woodland, or grassland habitat is present in the Phase 1 SERP coverage area.
Woolly rose-mallow <i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	–	–	1B.2	Freshwater marshes and swamps, moist riverbanks, and low peat islands in sloughs; below 400 feet elevation; blooms June–September	<b>High potential to occur.</b> This species has been identified on levees and there are several documented occurrences near the Phase 1 SERP coverage area.

**Table 3.3-1**  
**Special-Status Plant Species Known to Occur or with Potential to Occur in the**  
**Phase I SERP Coverage Area**

Species	Status <sup>1</sup>			Habitat and Blooming Period	Potential for Occurrence <sup>2</sup>
	USFWS	CDFW	CNPS Other		
California satintail <i>Imperata brevifolia</i>	—	—	2.1	Mesic sites and alkali seeps in coastal scrub, chaparral, riparian scrub, and creosote bush scrub; below 6,000 feet elevation; blooms September–May	<b>Low potential to occur.</b> Habitat in the Phase 1 SERP coverage area is marginal and the nearest documented occurrence is from Mud Creek in Butte County at an elevation of approximately 2,500 feet.
Carquinez goldenbush <i>Isocoma arguta</i>	—	—	1B.1	Alkaline soils in valley and foothill grassland; 100 to 5,800 feet elevation; blooms May–October	<b>Not expected to occur.</b> There is no suitable habitat in the Phase 1 SERP coverage area.
Northern California black walnut <i>Juglans hindsii</i>	—	—	1B.1	Riparian forest and woodland; below 1,500 feet elevation; blooms April–May	<b>Not expected to occur.</b> There are only three native stands of this species. Historic occurrences along the Sacramento River between Freeport and Rio Vista, primarily at Walnut Grove, were extirpated by 1949.
Delta tule pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	—	—	1B.2	Freshwater and brackish marshes and swamps; below 100 feet elevation; blooms May–July	<b>Moderate potential to occur.</b> Species has been documented on levees and there are several records of this species near the Phase 1 SERP coverage area (e.g., Miner, Steamboat, Snodgrass, Cache, and Georgiana sloughs).
Mason's lilaeopsis <i>Lilaeopsis masonii</i>	—	R	1B.1	Tidally influenced freshwater and brackish marshes and riparian scrub; 0 to 35 feet elevation; blooms April–November	<b>Low potential to occur.</b> Suitable tidal habitat is present in the larger SRFCP area, but not within the Phase 1 SERP coverage area. Species is known from several sloughs in the area, including Cache, Steamboat, and Lindsey sloughs, and from the Sacramento River downstream of the Phase 1 SERP coverage area.

<p><b>Table 3.3-1</b> <b>Special-Status Plant Species Known to Occur or with Potential to Occur in the Phase I SERP Coverage Area</b></p>					
Species	Status <sup>1</sup>			Habitat and Blooming Period	Potential for Occurrence <sup>2</sup>
	USFWS	CDFW	CNPS Other		
Delta mudwort <i>Limosella subulata</i>	—	—	2.1	Tidally influenced freshwater and brackish marshes and riparian scrub; 0 to 10 feet elevation; blooms May–August	<b>Low potential to occur.</b> Suitable tidal habitat is present in the larger SRFCP area, but not within the Phase 1 SERP coverage area. Known from several sloughs in the larger SRFCP area, but not within the Phase 1 SERP coverage area.
Showy golden madia <i>Madia radiata</i>	—	—	1B.1	Cismontane woodland, valley and foothill grassland; 75 to 3,000 feet elevation; blooms March–May	<b>Not expected to occur.</b> Suitable grassland and woodland habitats are not present in the Phase 1 SERP coverage area.
Veiny monardella <i>Monardella venosa</i>	—	—	1B.1	Heavy clay soils in cismontane woodland and valley and foothill grassland; 200 to 1,500 feet elevation; blooms May–July	<b>Not expected to occur.</b> Suitable grassland and woodland habitats are not present in the Phase 1 SERP coverage area.
Eel-grass pondweed <i>Potamogeton zosteriformis</i>	—	—	2.2	Marshes and swamps; below 6,000 feet elevation; blooms June–July	<b>Low potential to occur.</b> Only record of this species near the Phase 1 SERP coverage area is from the Sacramento Delta peat lands in the vicinity of Webb Island, Contra Costa County.
Hartweg's golden sunburst <i>Pseudobahia bahiifolia</i>	E	E	1B.1	North- to northeast-facing slopes on fine to medium-textured sandy loam soils in valley and foothill grasslands with mima-mound topography; 50 to 500 feet elevation; blooms March–April	<b>Not expected to occur.</b> This species is associated with a particular microhabitat that is not present in the Phase 1 SERP coverage area. There is an historic CNDDDB record from Yuba River at the Feather River confluence, but that location is extirpated and the species' current distribution is restricted to the San Joaquin Valley and adjacent central Sierra foothills.

**Table 3.3-1**  
**Special-Status Plant Species Known to Occur or with Potential to Occur in the**  
**Phase I SERP Coverage Area**

Species	Status <sup>1</sup>			Habitat and Blooming Period	Potential for Occurrence <sup>2</sup>
	USFWS	CDFW	CNPS Other		
California beaked rush <i>Rhyncospora californica</i>	—	—	1B.1	Freshwater marshes, seeps, meadows; 150 to 3,000 feet elevation; blooms May–July	<b>Low potential to occur.</b> Suitable habitat may be present, but this species' range is restricted to the San Francisco Bay area, Sierra Nevada foothills, North Coast and Klamath Ranges, and the north coast. Nearest known occurrences are from Big Chico Creek in Upper Bidwell Park.
Sanford's arrowhead <i>Sagittaria sanfordii</i>	—	—	1B.2	Assorted shallow marshes and swamps; 0 to 2,000 feet elevation; blooms May–October	<b>High potential to occur.</b> Suitable habitat is present and species is known to occur at several locations in the vicinity of the Phase 1 SERP coverage area, including locations along the American River in the City of Sacramento and along Morrison Creek near Freeport.
Butte County checkerbloom <i>Sidalcea robusta</i>	—	—	1B.2	Chaparral, cismontane woodland; 300 to 5,000 feet elevation; blooms April–June	<b>Not expected to occur.</b> No suitable habitat is present in the Phase 1 SERP coverage area.
San Francisco campion <i>Silene verecunda</i> ssp. <i>verecunda</i>	—	—	1B.2	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland; 100 to 2,000 feet elevation; blooms March–June	<b>Not expected to occur.</b> No suitable habitat is present in the Phase 1 SERP coverage area and the only record of this species in the Central Valley is from the Sutter Buttes. All other records are from the central coast and Mojave Desert.
Slender-leaved pondweed <i>Stuckenia filiformis</i>	—	—	2.2	Assorted shallow marshes and swamps; 900 to 7,000 feet elevation; blooms May–July	<b>Not expected to occur.</b> This species is typically found at much higher elevations than the Phase 1 SERP coverage area.

<p><b>Table 3.3-1</b> <b>Special-Status Plant Species Known to Occur or with Potential to Occur in the Phase I SERP Coverage Area</b></p>					
Species	Status <sup>1</sup>			Habitat and Blooming Period	Potential for Occurrence <sup>2</sup>
	USFWS	CDFW	CNPS Other		
Suisun Marsh aster <i>Symphotrichum lentum</i>	—	—	1B.2	Brackish and freshwater marshes and swamps; 0 to 10 feet elevation; blooms May–November	<b>Moderate potential to occur.</b> Suitable habitat is present and this species has been documented on levees. Documented occurrences are along the Sacramento River downstream of the Phase 1 SERP coverage area (e.g., Brannan Island near Rio Vista Bridge, east of Van Sickle Island, Marshall Cut, near Decker Island, Threemile Slough, Georgiana Slough, and Sherman Island). Several of these documented occurrences are within the larger SRFCP area.
Side-flowering skullcap <i>Scutellaria lateriflora</i>	—	—	2.2	Wet meadows and seeps, marshes and swamps, riparian wetland; below 1,500 feet elevation; blooms May–July	<b>Moderate potential to occur.</b> Suitable habitat may be present and the species has been documented near the Sacramento River downstream of the Phase 1 SERP coverage area near the town of Locke.
Saline clover <i>Trifolium hydrophilum</i>	—	—	1B.2	Marshes and swamps, mesic areas on alkaline soils in valley and foothill grassland, vernal pools; 0 to 985 feet elevation; blooms April–June	<b>Not expected to occur.</b> No suitable habitat is present in the Phase 1 SERP coverage area.
Brazilian watermeal <i>Wolffia brasiliensis</i>	—	—	2.3	Assorted shallow freshwater marshes and swamps; 90 to 350 feet elevation; blooms April–December	<b>Moderate potential to occur.</b> Suitable habitat is present in the Phase 1 SERP coverage area. Nearest documented occurrence is in a slough along the Sacramento River near Ordbend in Glenn County.



**Table 3.3-1  
Special-Status Plant Species Known to Occur or with Potential to Occur in the  
Phase I SERP Coverage Area**

Notes: CESA = California Endangered Species Act; CNPS = California Native Plant Society; Delta = Sacramento–San Joaquin Delta; CDFW = California Department of Fish and Wildlife; SERP = Small Erosion Repair Program; SRFCP = Sacramento River Flood Control Project; USFWS = U.S. Fish and Wildlife Service.

<sup>1</sup> Legal Status Definitions

**U.S. Fish and Wildlife Service:**

E Endangered (legally protected)

T Threatened (legally protected)

**California Department of Fish and Wildlife:**

E Endangered (legally protected)

R Rare (legally protected)

**California Native Plant Society Categories:**

1A Plant species presumed extinct in California

1B Plant species considered rare or endangered in California and elsewhere (protected under CEQA, but not legally protected under ESA or CESA)

2 Plant species considered rare or endangered in California but more common elsewhere (protected under CEQA, but not legally protected under ESA or CESA)

**CNPS Extensions:**

1 Seriously threatened in California (high degree/immediacy of threat)

2 Fairly threatened in California (moderate degree/immediacy of threat)

3 Not very threatened in California (low degree/immediacy of threats or no current threats known)

<sup>2</sup> Potential for Occurrence Definitions:

*High potential to occur* — Suitable habitat is present in the Phase I SERP coverage area and populations are known to occur in the immediate vicinity.

*Moderate potential to occur* — Suitable habitat is present in the Phase I SERP coverage area; populations may not be known to occur in the immediate vicinity, but are known to occur in the region.

*Low potential to occur* — Species not likely to occur because of marginal habitat quality or distance from known occurrences.

*Not expected to occur* — No suitable habitat is present in the Phase I coverage area and/or the Phase I SERP coverage area is outside of the known distribution for the species. Any occurrence would be very unlikely.

Sources: CNDDB 2012; CNPS 2012; data compiled by AECOM in 2012.

**Table 3.3-2**  
**Special-Status Plant Species Not Expected to Occur in the**  
**Phase I SERP Coverage Area Due to Lack of Suitable Soils or Habitat Types**

Species	Justification for Exclusion
Pink creamsacs ( <i>Castilleja rubicundula</i> ssp. <i>rubicundula</i> ) Colusa layia ( <i>Layia septentrionalis</i> ) Keck's checkerbloom ( <i>Sidalcea keckii</i> )	Typically found on serpentine soils, which are not present in the Phase 1 SERP coverage area.
Alkali milk-vetch ( <i>Astragalus tener</i> var. <i>tener</i> ) Vernal pool smallscale ( <i>Atriplex persistens</i> ) Hoover's spurge ( <i>Chamaesyce hooveri</i> ) Dwarf downingia ( <i>Downingia pusilla</i> ) Boggs Lake hedge-hyssop ( <i>Gratiola heterosepala</i> ) Ahart's dwarf rush ( <i>Juncus leiospermus</i> var. <i>ahartii</i> ) Red Bluff dwarf rush ( <i>J. leiospermus</i> var. <i>leiospermus</i> ) Contra Costa goldfields ( <i>Lasthenia conjugens</i> ) Coulter's goldfields ( <i>Lasthenia glabrata</i> ssp. <i>coulteri</i> ) Legenere ( <i>Legenere limosa</i> ) Heckard's peppergrass ( <i>Lepidium latipes</i> var. <i>heckardii</i> ) Butte County meadowfoam ( <i>Limnanthes floccosa</i> ssp. <i>californica</i> ) Baker's navarretia ( <i>Navarretia leucocephala</i> spp. <i>bakeri</i> ) Colusa grass ( <i>Neostapfia colusana</i> ) Hairy orcutt grass ( <i>Orcuttia pilosa</i> ) Slender orcutt grass ( <i>Orcuttia tenuis</i> ) Sacramento orcutt grass ( <i>Orcuttia viscida</i> ) Ahart's paronychia ( <i>Paronychia ahartii</i> ) Bearded popcorn-flower ( <i>Plagiobothrys hystriculus</i> ) Butte County golden clover ( <i>Trifolium jokerstii</i> ) Greene's tuctoria ( <i>Tuctoria greenei</i> ) Crampton's tuctoria ( <i>Tuctoria mucronata</i> )	Typically occur in playas or vernal pool habitats, which are not present in the Phase 1 SERP coverage area.
Soft bird's-beak ( <i>Chloropyron molle</i> ssp. <i>molle</i> )	Found in coastal salt marsh habitats that are not present in the Phase 1 SERP coverage area
Heartscale ( <i>Atriplex cordulata</i> var. <i>cordulata</i> ) Brittlescale ( <i>Atriplex depressa</i> ) San Joaquin spearscale ( <i>Atriplex joaquiniana</i> ) Lesser slatscale ( <i>Atriplex minuscula</i> ) Palmate-bracted bird's-beak ( <i>Chloropyron palmatum</i> ) Wright's trichocoronis ( <i>Trichocoronis wrightii</i> )	Typically found in alkali sink, alkali meadow, alkali playa, or alkali vernal pool habitats that are not present in the Phase 1 SERP coverage area
Antioch Dunes buckwheat ( <i>Eriogonum nudum</i> var. <i>psychicola</i> ) Contra Costa wallflower ( <i>Erysimum capitatum</i> var. <i>angustatum</i> ) Antioch Dunes evening primrose ( <i>Oenothera deltoids</i> ssp. <i>howellii</i> )	Found on inland dune habitats that are not present in the Phase 1 SERP coverage area
Source: CNDDDB 2012; CNPS 2012; data compiled by AECOM in 2012	

**Table 3.3-3**  
**Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Fish				
Central Valley steelhead <i>Oncorhynchus mykiss</i>	T	T	Spawns in cool, moderately fast-flowing water with gravel bottom. Migrates through streams and rivers throughout the Sacramento Valley.	<b>Present.</b> Suitable habitat present in the Sacramento, Feather, and Lower American rivers.
Central Valley spring-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	T	T	Spawns and rears in mainstem Sacramento River and suitable perennial tributaries. Requires cool year-round water temperatures and deep pools for over-summering habitat. Spawns in riffles with gravel and cobble substrate.	<b>Present.</b> Suitable habitat present in the Sacramento, Feather, and Lower American rivers.
Sacramento River winter-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	E	E	Spawns and rears in mainstem Sacramento River. Requires cool year-round water temperatures because spawning occurs during summer. Requires deep pools and riffles and clean gravel and cobble substrate to spawn.	<b>Present.</b> Suitable habitat present in the Sacramento, Feather, and Lower American rivers.
Central Valley fall/late fall-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	SC	SC	Spawns and rears in mainstem Sacramento River and suitable perennial tributaries. Requires cool year-round water temperatures and deep pools for over-summering habitat. Spawns in riffles with gravel and cobble.	<b>Present.</b> Suitable habitat present in the Sacramento, Feather, and Lower American rivers.
Green sturgeon <i>Acipenser medirostris</i>	T	SC	Prefers deep, low-gradient reaches (>5 meters) or off-channel covers.	<b>Present.</b> Habitat present in the Sacramento, Feather, and Lower American rivers.

**Table 3.3-3  
Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Delta smelt <i>Hypomesus transpacificus</i>	T	E	Known to occur as far north as the city of Sacramento. Spawns in shallow, fresh, or slightly brackish water.	<b>Present.</b> Suitable habitat present in tidally influenced reaches of the Sacramento–San Joaquin Delta (Delta).
Longfin smelt <i>Spirinchus thaleichthys</i>	SC	T	Occurs in sloughs of Suisun Bay and Delta. Found close to shore in bays and estuaries. Ascends coastal streams to spawn.	<b>Present.</b> Suitable habitat in tidally influenced and brackish waters of the Delta.
River lamprey <i>Lampetra ayresi</i>	--	SC	Spawns in freshwater rivers and streams with juveniles found in slow-moving current, silty bottom habitats; metamorphosed juveniles migrate through estuaries to the ocean. Found in the Sacramento River.	<b>Present.</b> Suitable habitat present in the Sacramento, Feather, and Lower American rivers and their tributaries.
Hardhead <i>Mylopharodon conocephalus</i>	--	SC	Prefers deep, rock- and sand-bottomed pools of small to large rivers. Found throughout the Sacramento and San Joaquin River systems.	<b>Present.</b> Suitable habitat present in the Sacramento River and all of its tributaries.
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	SC	SC	Occurs in shallow, dead-end sloughs with submerged vegetation and backwater slough areas in the lower Delta. Prefers low-salinity shallow-water areas. Occurs in the Sacramento River north to River Mile (RM) 97.0 and in the Feather River to RM 10.0.	<b>Present.</b> Sacramento splittail may be present in the Sacramento River as far north as RM 97.0 and in the Feather River to RM 10.0.

**Table 3.3-3**  
**Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Invertebrates				
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T	—	Elderberry shrubs in the Central Valley and adjacent foothills.	<b>Present.</b> Elderberry shrubs are present within the Phase 1 SERP coverage area.
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	E	—	Highly turbid, large vernal pools.	<b>Not expected to occur.</b> No suitable vernal pool habitat occurs within the Phase 1 SERP coverage area.
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	T	—	Pools with inundation period of more than 2 weeks; distributed throughout California.	<b>Not expected to occur.</b> No suitable vernal pool habitat occurs within the Phase 1 SERP coverage area.
Delta green ground beetle <i>Elaphrus viridis</i>	T	—	Vernal pools; restricted to Jepson Prairie, Solano County.	<b>Not expected to occur.</b> No suitable vernal pool habitat occurs within the Phase 1 SERP coverage area, and the area is outside of this species' known range.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	E	—	Pools with inundation period of more than 2 weeks; distributed throughout California.	<b>Not expected to occur.</b> No suitable vernal pool habitat occurs within the Phase 1 SERP coverage area.
Amphibians				
California tiger salamander <i>Ambystoma californiense</i>	T	SC	Vernal or temporary pools in annual grasslands or open stages of woodlands.	<b>Not expected to occur.</b> No breeding ponds, vernal pools, or suitable upland habitat occurs within the Phase 1 SERP coverage area.

**Table 3.3-3  
Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
California red-legged frog <i>Rana aurora draytonii</i>	T	–	Streams, freshwater pools, and ponds with overhanging and emergent vegetation.	<b>Not expected to occur.</b> Potentially suitable habitat may exist within the Phase 1 SERP coverage area; however, this species is not currently known to occur in the Central Valley.
Foothill yellow-legged frog <i>Rana boylei</i>	–	SC	Rocky streams in a variety of habitats; found in the Coast Ranges.	<b>Not expected to occur.</b> Suitable rocky stream habitat is not present in the Phase 1 SERP coverage area.
Western spadefoot toad <i>Spea hammondi</i>	–	SC	Grasslands with temporary pools.	<b>Not expected to occur.</b> No suitable vernal pool habitat occurs within the Phase 1 SERP coverage area.
<b>Reptiles</b>				
Western pond turtle <i>Emys marmorata</i>	–	SC	Slow-water aquatic habitat with available basking sites. Hatchlings require shallow water with dense submergent or short emergent vegetation. Requires upland oviposition site near an aquatic site.	<b>Present.</b> Suitable habitat occurs within the Sacramento, Feather, and Lower American rivers and their tributaries.
San Joaquin coachwhip <i>Masticophis flagellum ruddocki</i>	–	SC	Occurs in open, dry, treeless areas, including grassland and saltbush scrub.	<b>Not expected to occur.</b> Suitable grasslands or saltmarsh scrub habitat is not present within the Phase 1 SERP coverage area.
Coast horned lizard <i>Phrynosoma blainvillii</i>	–	SC	Occurs in arid grasslands, woodlands, coniferous forests, and chaparral with patches of sandy soils.	<b>Not expected to occur.</b> Suitable habitat, including grasslands or canyons with open arid areas and loose friable soils, is not present within the Phase 1 SERP coverage area.

**Table 3.3-3  
Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Giant garter snake <i>Thamnophis gigas</i>	T	T	Freshwater marshes and low-gradient streams with emergent vegetation; adapted to drainage canals and irrigation ditches with mud substrate.	<b>Present.</b> Suitable habitat is present within the Phase 1 SERP coverage area.
<b>Birds</b>				
Northern goshawk <i>Accipiter gentilis</i>	–	SC	Generally requires mature conifer forests with large trees, snags, downed logs, dense canopy cover, and open understories for nesting; aspen stands also are used for nesting. Foraging habitat includes forests with dense to moderately open overstories and open understories interspersed with meadows, brush patches, riparian areas, or other natural or artificial openings. Goshawks reuse old nest structures and maintain alternate nest sites.	<b>Not expected to occur.</b> No suitable nesting or foraging habitat for this species is present within the Phase 1 SERP coverage area.
Tricolored blackbird <i>Agelaius tricolor</i>	–	SC	Breeds in colonies near fresh water in dense emergent vegetation. Forages in agricultural croplands.	<b>Low potential to occur.</b> Some emergent vegetation may be present; however, dense or extensive emergent vegetation stands that could support a breeding population are absent in the vicinity of the erosion sites.
Golden eagle <i>Aquila chrysaetos</i>	–	FP	Mountains and foothills throughout California; nests on cliffs and escarpments or in tall trees.	<b>Low potential to occur.</b> Suitable nesting habitat is not present within the Phase 1 SERP coverage area; individuals may occasionally use portions of the coverage area for foraging.

**Table 3.3-3  
Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Short-eared owl <i>Asio flammeus</i>	–	SC	Nests on the ground in dense vegetation in open grassland and marshes.	<b>Not expected to occur.</b> No suitable nesting or foraging habitat for this species is present within the Phase 1 SERP coverage area.
Long-eared owl <i>Asio otus</i>	–	SC	Found in a variety of habitat types throughout its range. Nests in woodland, forest, and open settings. Occupies wooded and non-wooded areas that support relatively dense vegetation adjacent to or within larger open areas such as grasslands or meadows. Trees and shrubs used for nesting and roosting include oaks, willows, cottonwoods, conifers, and junipers.	<b>Low potential to occur.</b> Dense riparian areas and woodlands are uncommon within the Phase 1 SERP coverage area.
Western burrowing owl <i>Athene cunicularia hypugaea</i>	–	SC	Grasslands and ruderal habitats.	<b>Moderate potential to occur.</b> Potentially suitable habitat occurs in the Phase 1 SERP coverage area.
Swainson's hawk <i>Buteo swainsonii</i>	–	T	Breeds in stands with few trees in juniper-sage flats, riparian areas, and oak savannah; forages in adjacent livestock pasture, grassland, or grain fields.	<b>Moderate potential to occur.</b> Potentially suitable habitat occurs in the Phase 1 SERP coverage area.
Yellow-headed blackbird	–	SC	Breeds in marshes that have tall emergent vegetation, such as cattails or tules, and in open areas near and over relatively deep water.	<b>Low potential to occur.</b> Suitable nesting habitat is not present within the Phase 1 SERP coverage area; individuals may occasionally use portions of the coverage area for foraging.



**Table 3.3-3  
Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Vaux's swift <i>Chaetura vauxi</i>	–	SC	Prefers redwood and Douglas-fir habitats; nests in hollow trees and snags or, occasionally, in chimneys; forages aerially.	<b>Low potential to occur.</b> Suitable nesting habitat is absent from the Phase 1 SERP coverage area.
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	T	SC	Occurs throughout California, on sandy or gravelly beaches along the coast on estuarine salt ponds, alkali lakes, and Salton Sea.	<b>Not expected to occur.</b> Suitable sandy or gravelly beach-type habitat is absent in the Phase 1 SERP coverage area.
Mountain plover <i>Charadrius montanus</i>	–	SC	Wintering habitat includes short grasslands and plowed fields below 3,000 feet. Mountain plovers do not breed in California.	<b>Not expected to occur.</b> No suitable wintering habitat for this species is present within the Phase 1 SERP coverage area.
Black tern <i>Chlidonias niger</i>	–	SC	Shallow water and fresh emergent wetlands, lakes, ponds, moist grasslands, and agricultural fields.	<b>Not expected to occur.</b> No suitable nesting or foraging habitat for this species is present within the Phase 1 SERP coverage area.
Northern harrier <i>Circus cyaneus</i>	–	SC	Found in a variety of open grassland, wetland, and agricultural habitats. Open wetland habitats used for breeding include marshy meadows, wet and lightly grazed pastures, and freshwater and brackish marshes. Breeding habitat also includes dry upland habitats, such as grassland, cropland, drained marshland, and shrub-steppe in cold deserts.	<b>Low potential to occur.</b> No suitable nesting habitat for this species is present within the Phase 1 SERP coverage area. Occasionally individuals may forage in or migrate through the Phase 1 SERP coverage area.

**Table 3.3-3  
Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Black swift <i>Cypseloides niger</i>	–	SC	Nests in moist crevices, in caves or sea cliffs above the surf, or on cliffs behind or adjacent to waterfalls in deep canyons; forages widely in many habitats.	<b>Not expected to occur.</b> No suitable nesting habitat for this species is present within the Phase 1 SERP coverage area.
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	C	E	Nesting habitat in cottonwood/ willow riparian forest. Occurs only along the upper Sacramento Valley portion of the Sacramento River, the Feather River in Sutter County, the south fork of the Kern River in Kern County, and along the Santa Ana, Amargosa, and lower Colorado rivers.	<b>Low potential to occur.</b> No suitable nesting habitat (extensive riparian forest) for this species is present within the Phase 1 SERP coverage area. Occasionally individuals may forage in or migrate through the Phase 1 SERP coverage area.
Yellow warbler <i>Dendroica petechia</i>	–	SC	Typically breeds in wet areas with dense riparian vegetation. Breeding habitats primarily include willow patches in montane meadows and riparian scrub and woodland dominated by willow, cottonwood, aspen, or alder with dense understory cover.	<b>High potential to occur.</b> Suitable nesting habitat present in riparian woodlands within the Phase 1 SERP coverage area.
White-tailed kite <i>Elanus leucurus</i>	–	FP	Occurs in low elevation grassland, agricultural, wetland, oak-woodland, or savannah habitats. Riparian habitat adjacent to open areas also used.	<b>High potential to occur.</b> Suitable nesting and foraging habitat is present within the Phase 1 SERP coverage area.

**Table 3.3-3  
Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Willow flycatcher <i>Empidonax traillii</i>	–	E	Suitable habitat typically consists of montane meadows that support riparian deciduous shrubs and remain wet through the nesting season. Important characteristics of suitable meadows include a high water table that results in standing or slow-moving water or saturated soils during the breeding season, abundant riparian deciduous shrub cover, and riparian shrub structure with moderate to high foliar density that is uniform from the ground to the shrub canopy.	<b>Not expected to occur.</b> Willow flycatcher is a spring/ fall migrant that breeds in Sierras and Cascades in montane meadows. Migrating individuals may pass through the Phase 1 SERP coverage area.
Peregrine falcon <i>Falco peregrinus</i>	–	E, FP	Nests and roosts on protected ledges of high cliffs, usually adjacent to water bodies and wetlands that support abundant avian prey.	<b>Low potential to occur.</b> No suitable cliffs are present to serve as breeding habitat, but this species may forage within the Phase 1 SERP coverage area.
Saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	–	SC	Limited to the San Francisco Bay area. Occurs in salt and brackish water with tall grasses and tule patches.	<b>Not expected to occur.</b> No suitable marsh habitat is present within the Phase 1 SERP coverage area; the coverage area is outside of the species range.
Greater sandhill crane <i>Grus canadensis tabida</i>	–	FP	Extensive marshlands required for breeding; forages in nearby pastures, fields, and meadows. This species does not breed in the Central Valley.	<b>Not expected to occur.</b> No suitable marsh habitat is present within the Phase 1 SERP coverage area.

**Table 3.3-3  
Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Bald eagle <i>Haliaeetus leucocephalus</i>	–	E, FP	Uses ocean shorelines, lake margins, and river courses for both nesting and wintering. Most nests are within 1 mile of water and in large trees with open branches. Bald eagles roost communally in winter.	<b>Low potential to occur.</b> No suitable nesting habitat is present within the Phase 1 SERP coverage area; individuals may forage within the coverage area.
Yellow-breasted chat <i>Icteria virens</i>	–	SC	Breeds in riparian habitats with dense understory vegetation, such as willow and blackberry on the coast and in the Sierra foothills.	<b>Moderate potential to occur.</b> Suitable nesting habitat is present in riparian woodlands within the Phase 1 SERP coverage area.
Western least bittern <i>Ixobrychus exilis hesperis</i>	–	SC	Breeds in expansive freshwater marshes.	<b>Not expected to occur.</b> No suitable marsh habitat is present within the Phase 1 SERP coverage area.
Loggerhead shrike <i>Lanius ludovicianus</i>	–	SC	Forages in open grassland habitats throughout the Central Valley of California. Nests in shrubs and trees.	<b>Low potential to occur.</b> Open grassland habitats are not present within the Phase 1 SERP coverage area.
California black rail <i>Laterallus jamaicensis coturniculus</i>	–	T	Coastal and inland tidal salt marsh and freshwater marsh habitat.	<b>Not expected to occur.</b> No suitable marsh habitat is present within the Phase 1 SERP coverage area.
Suisun song sparrow <i>Melospiza melodia maxillaris</i>	–	SC	Suisun Bay; brackish water with emergent vegetation.	<b>Not expected to occur.</b> No suitable marsh habitat is present within the Phase 1 SERP coverage area; species range is limited to Suisun Bay.

**Table 3.3-3**  
**Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
American white pelican <i>Pelecanus erythrorhynchos</i>	—	SC	Nests on small islands or remote dikes that are flat or gently sloping and lack shrubs or other obstructions and in large freshwater or saltwater lakes.	<b>Not expected to occur.</b> No suitable nesting habitat is present within the Phase 1 SERP coverage area.
Purple martin <i>Progne subis</i>	—	SC	Nests in valley foothill, montane hardwood-conifer, and riparian habitats with tree cavities or human-made structures available for nesting.	<b>Not expected to occur.</b> Breeding populations in California are limited to the coast and mountains and several bridges in the city of Sacramento. Suitable nesting structures or cavities are very limited within the Phase 1 SERP coverage.
California clapper rail <i>Rallus longirostris obsoletus</i>	E	E	San Francisco, Morro, and Monterey Bays; mudflats, marshes, or tidal sloughs with taller plant material.	<b>Not expected to occur.</b> No suitable marsh habitat is present within the Phase 1 SERP coverage area.
Bank swallow <i>Riparia riparia</i>	—	SE	Nests in fine-textured or sandy banks or cliffs along rivers, streams, ponds, or lakes. Typically nests in colonies.	<b>Moderate potential to occur.</b> Levees and erosion sites may provide or be near suitable habitat.
California spotted owl <i>Strix occidentalis occidentalis</i>	—	SC	Occurs in several forest vegetation types, including mixed conifer, ponderosa pine, red fir, and montane hardwood. Nesting habitat is generally characterized by dense canopy closure with medium to large trees and multistoried stands. Foraging habitat can include intermediate to late-successional forest with greater than 40 percent canopy cover.	<b>Not expected to occur.</b> No suitable nesting or foraging habitat for this species is present within the Phase 1 SERP coverage area.

**Table 3.3-3  
Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Mammals				
Pallid bat <i>Antrozous pallidus</i>	—	SC	Locally common at lower elevations in California and occurs in grassland, shrubland, woodland, and mixed conifer forests. Absent from highest elevation locations in the Sierra Nevada. Rocky outcrops, caves, crevices, and occasional tree cavities or buildings provide roosts.	<b>Low potential to occur.</b> Suitable roosting habitat is absent from erosion sites. Individuals may forage within the Phase 1 SERP coverage area.
Ring-tailed cat <i>Bassariscus astutus</i>	—	FP	Occurs in dense riparian habitats and in brush stands of most forest and shrub habitats. Nests in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests.	<b>Low potential to occur.</b> Erosion sites are unlikely to support the ample riparian habitat required by this species.
Pale Townsend's big-eared bat <i>Corynorhinus townsendii pallescens</i>	—	SC	Range is throughout California, mostly in mesic habitats. Limited by available roost sites (i.e., caves, tunnels, mines, and buildings).	<b>Low potential to occur.</b> Suitable roosting habitat is absent from erosion sites. Individuals may forage within the Phase 1 SERP coverage area.
Marysville kangaroo rat <i>Dipodomys californicus eximius</i>	—	SC	Annual grassland, desert, or chaparral with friable soils or other rodent burrows. Known distribution limited to Sutter Buttes.	<b>Not expected to occur.</b> No suitable habitat is present within the Phase 1 SERP coverage area; the species range is outside of the coverage area.
California mastiff bat <i>Eumops perotis californicus</i>	—	SC	Many open habitats, including coniferous and deciduous woodlands, grassland, and chaparral. Roosts in significant rock outcroppings and crevices in cliff faces.	<b>Low potential to occur.</b> Suitable roosting habitat is absent from erosion sites. Individuals may forage within the Phase 1 SERP coverage area.

**Table 3.3-3**  
**Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Western red bat <i>Lasiurus blossevillii</i>	–	SC	Day roosting common in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. An association with intact riparian habitat may exist (particularly willows, cottonwoods, and sycamores).	<b>Moderate potential to occur.</b> Suitable roosting and foraging habitat present within the Phase 1 SERP coverage area.
Riparian woodrat <i>Neotoma fuscipes riparia</i>	E	SC	Deciduous valley oak habitat with abundant shrub cover. Occurs in San Joaquin and Stanislaus River watersheds. Only known population in Caswell State Park, San Joaquin County.	<b>Not expected to occur.</b> No suitable habitat is present within the Phase 1 SERP coverage area; the species range is outside of the coverage area.
Salt-marsh harvest Mouse <i>Reithrodontomys raviventris</i>	E	E	San Francisco, San Pablo, and Suisun Bays; pickleweed and other halophytes in marshes.	<b>Not expected to occur.</b> No suitable habitat is present within the Phase 1 SERP coverage area; the species range is outside of the coverage area.
Suisun shrew <i>Sorex ornatus sinuosus</i>	–	SC	San Pablo and Suisun Bays; tidal marshes.	<b>Not expected to occur.</b> No suitable habitat is present within the Phase 1 SERP coverage area; the species range is outside of the coverage area.
American badger <i>Taxidea taxus</i>	–	SC	Variety of habitats, including grasslands and shrub-dominated areas with loose, dry, friable soils.	<b>Not expected to occur.</b> No suitable habitat with loose friable soils is present within the Phase 1 SERP coverage area.
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	E	–	San Joaquin Valley; prefers grasslands and prairie habitats near freshwater marshes and alkali sinks.	<b>Not expected to occur.</b> No suitable open grassland habitat is present within the Phase 1 SERP coverage area.

**Table 3.3-3  
Special-Status Fish and Wildlife Species Evaluated for the SERP**

Common Name and Scientific Name	Regulatory Status <sup>1</sup>		Habitat Associations	Potential for Occurrence <sup>2</sup>
	Federal	State		
Sierra Nevada red fox <i>Vulpes vulpes necator</i>	—	T	Inhabits upper montane and alpine habitats of Sierra Nevada, Cascades, Klamath, and north Coast Ranges. Needs water source and denning sites. Rarely seen. Sensitive to human disturbance.	<b>Not expected to occur.</b> No suitable montane or alpine habitat present in the Phase 1 SERP coverage area.

Notes:

<sup>1</sup> Regulatory Status Definitions:

*Federal—U.S. Fish and Wildlife Service:*

- E = Endangered species under the federal Endangered Species Act
- T = Threatened species under the federal Endangered Species Act
- C = Candidate for listing under the federal Endangered Species Act

*State—California Department of Fish and Wildlife:*

- T = Threatened
- E = Endangered
- FP = Fully Protected
- SC = Species of special concern

<sup>2</sup> Potential for Occurrence Definitions:

- Observed Species was observed in the study area during site visits or was documented there by another reputable source.
- High potential to occur All of the species' specific life history requirements can be met by habitat present in the study area, and populations are known to occur in the immediate vicinity.
- Moderate potential to occur Some or all of the species life history requirements are provided by habitat in the study area; populations may not be known to occur in the immediate vicinity, but are known to occur in the region.
- Low potential to occur Species not likely to occur because of marginal habitat quality or distance from known occurrences.
- Not expected to occur None of the species' life history requirements are provided by habitat in the study area and/or the study area is outside of the known distribution for the species. Any occurrence would be very unlikely.

Source: Data compiled by AECOM in 2012



snake, Swainson's hawk, yellow warbler, white-tailed kite, burrowing owl, yellow-breasted chat, bank swallow, and western red bat. These species are described below.

### **Central Valley Steelhead**

The Central Valley steelhead distinct population segment (DPS) was federally listed as threatened on March 19, 1998 (63 Federal Register [FR] 11481–11519). The threatened status of Central Valley steelhead was reaffirmed in NMFS's final listing determination on January 5, 2006 (70 FR 37160–37204). NMFS originally designated critical habitat for Central Valley steelhead on February 16, 2000 (65 FR 7764–7787); however, following a lawsuit (*National Association of Home Builders et al. v. Donald L. Evans, Secretary of Commerce, et al.* [2002] U.S. District Court of District of Columbia, Case 1:00-CV-02799), NMFS decided to rescind the listing and reevaluate how to classify critical habitat for several evolutionary significant units (ESUs, now DPSs) of steelhead. Critical habitat for Central Valley steelhead was redesignated by NMFS on September 2, 2005 (70 FR 52630–52858). The DPS includes all naturally spawned populations of steelhead in the Sacramento and San Joaquin rivers and their tributaries, excluding steelhead from San Francisco and San Pablo bays and their tributaries. Artificially propagated fish from the Coleman and Feather River fish hatcheries are included in the DPS.

Steelhead has one of the most complex life histories of any salmonid species, exhibiting life histories as both anadromous and freshwater residents. Freshwater residents typically are referred to as rainbow trout, and those exhibiting an anadromous life history are called steelhead (64 FR 50394–50415, December 29, 1999). Steelhead exhibits highly variable life history patterns throughout its range, but is broadly categorized into winter and summer reproductive ecotypes. Winter steelhead, the most widespread reproductive ecotype and the only type currently present in Central Valley streams, becomes sexually mature in the ocean; enters spawning streams in summer, fall, or winter; and spawns a few months later in winter or late spring (McEwan and Jackson 1996).

In the Sacramento River, adult steelhead migrate upstream during most months of the year, beginning in July, peaking in September, and continuing through February or March (Hallock 1987). Spawning occurs primarily from January through March, but may begin as early as late December and may extend through April (Hallock 1987). Individual steelhead may spawn more than once, returning to the ocean between each spawning migration.

Juvenile steelhead rear a minimum of 1 and typically 2 or more years in freshwater before migrating to the ocean as smolts. Juvenile migration to the ocean generally occurs from December through August. The peak months of juvenile migration are January to May (McEwan 2001).

The importance of main channel and floodplain habitats to steelhead in the lower Sacramento River and upper Delta is not well understood. Steelhead smolts have been found in the Yolo Bypass during –winter and spring inundation, but the importance of this and other floodplain areas in the lower Sacramento River and upper Delta is not yet clear.

Critical habitat for Central Valley steelhead includes the stream channels in the designated stream reaches and the lateral extent as defined by the ordinary high-water line or bank-full elevation. Primary constituent elements (PCEs) of critical habitat in the Phase 1 SERP coverage area include (1) freshwater rearing sites that have adequate water quality and quantity, floodplain connectivity, and natural cover that supports juvenile growth and mobility; and (2) freshwater migration corridors that support adequate water quantity and quality as well as natural cover to provide food and migration pathways for juveniles and adults. Central Valley steelhead are known to occur in Regions 1–3 of the Phase 1 SERP coverage area.

### ***Central Valley Spring-Run Chinook Salmon***

The Central Valley spring-run Chinook salmon ESU was federally listed as threatened on September 16, 1999 (64 FR 50394–50415). The threatened status of this species was reaffirmed in NMFS’s final listing determination issued on June 28, 2005 (70 FR 37160–37204). Critical habitat for Central Valley spring-run Chinook salmon was designated by NMFS on September 2, 2005 (70 FR 52630–52858). The ESU includes all naturally spawned spring-run Chinook salmon in the Sacramento River and its tributaries. Naturally spawned fish of hatchery origin in the Feather and Yuba rivers as well as hatchery-spawned fish in the Feather River are also included (70 FR 37160–37204, June 28, 2005).

Adult spring-run Chinook salmon enter the mainstem Sacramento River from March through September, with the peak upstream migration occurring from May through June (Yoshiyama et al. 1998). Adults generally enter tributaries from the Sacramento River between mid-April and mid-June (Moyle 2002). Spring-run Chinook salmon are sexually immature during upstream migration, and adults hold in deep, cold pools near spawning habitat until spawning begins in late summer and fall. Spring-run Chinook salmon spawn in the upper reaches of the mainstem Sacramento River and tributary streams, with the largest tributary runs occurring in Butte, Deer, and Mill creeks (Yoshiyama et al. 1998). Spawning typically begins in late August and may continue through October. Juveniles emerge in November and December in most locations but may emerge later when water temperature is cooler. Newly emerged fry remain in shallow, low-velocity edgewater (DFG 1998).

Critical habitat for spring-run Chinook salmon includes all river channels and sloughs in the Phase 1 SERP coverage area. Critical habitat includes the stream channels and the lateral extent as defined by the ordinary high-water line or bank-full elevation. PCEs of critical habitat in the Phase 1 SERP Coverage area include (1) freshwater rearing sites that have adequate

water quality and quantity, floodplain connectivity, and natural cover that supports juvenile growth and mobility; and (2) freshwater migration corridors that support adequate water quantity and quality as well as natural cover to provide food and migration pathways for juveniles and adults (70 FR 52488–52586, September 2, 2005). Central Valley spring-run Chinook salmon are known to occur in Regions 1–3 of the Phase 1 SERP coverage area. The conservation value of critical habitat in this area is high because it supports both recruitment and survival of juveniles and adults (NMFS 2006).

The Phase I SERP coverage area includes habitats that have been designated as Essential Fish Habitat (EFH) for Chinook salmon, a major contributor to Pacific coast salmon fisheries. Pacific Coast salmon fishery EFH extends along the Pacific coast from Washington to Point Conception in California. Freshwater EFH includes all habitats currently and historically accessible to salmon and is based on descriptions of habitats used by Chinook salmon. Important components of EFH for Chinook salmon spawning, rearing, and migration include substrate composition; water quality, quantity, depth, and velocity; channel gradient and stability; food, cover, and habitat complexity; space, access, and passage; and habitat connectivity. EFH excludes areas above naturally occurring barriers, such as waterfalls, that have been present for several hundred years, and impassible dams identified on large rivers, including waterways within Region 4 of the Phase 1 SERP coverage area (62 FR 2343–2383, January 16, 1997). EFH has been designated for Central Valley spring-run Chinook salmon ESU. Spring-run EFH includes migration, holding, and rearing habitat for the Sacramento River and several tributaries (NMFS 1998a).

### ***Sacramento River Winter-Run Chinook Salmon ESU***

The Sacramento River winter-run Chinook salmon ESU was listed as threatened under the federal ESA on August 4, 1989 (54 FR 32085–32088). NMFS subsequently upgraded the federal listing to endangered on January 4, 1994 (59 FR 440–450). NMFS designated critical habitat for Sacramento River winter-run Chinook salmon on June 16, 1993 (58 FR 33212–33210). The ESU includes all naturally spawned populations of winter-run Chinook in the Sacramento River and its tributaries and populations from two artificial propagation programs, one at the Livingston Stone National Fish Hatchery and the other at Bodega Marine Laboratory (70 FR 37160–37204, January 5, 2006).

Winter-run Chinook salmon spend 1–3 years in the ocean. Adult winter-run Chinook salmon leave the ocean and migrate through the Sacramento–San Joaquin Delta (Delta) into the Sacramento River from December through July with peak migration in March (Moyle 2002). Adults spawn from mid-April through August (Moyle 2002). Egg incubation continues through October. The primary spawning habitat in the Sacramento River is above River Mile (RM) 243, although spawning has been observed downstream as far as RM 218 (NMFS 2001). Spawning

success below RM 243 may be limited primarily by warm water temperatures (Yoshiyama et al. 1998).

Within the Phase 1 SERP coverage area, the Sacramento River is considered to be critical habitat for winter-run Chinook salmon. Critical habitat includes the water column, river bottom, and adjacent riparian zone, which fry and juveniles use for rearing (71 FR 17757–17766, June 6, 2006). Sacramento River winter-run Chinook salmon are known to occur in Regions 1–3 of the Phase 1 SERP coverage area. The conservation value of critical habitat in the Phase I SERP coverage area is high because it supports both recruitment and survival of juveniles and adults (NMFS 2006).

EFH has been designated for Sacramento River winter–run Chinook salmon ESU (1998b). Winter-run EFH includes migration, holding, and rearing habitat for the Sacramento River and several tributaries (63 FR 11481–11519, March 19, 1998).

### ***Central Valley Fall-/Late Fall-Run Chinook Salmon***

On September 16, 1999 (50 FR 50394), NMFS determined that listing was not warranted for Central Valley fall-/late fall-run Chinook salmon ESU. However, the ESU was designated as a candidate for listing because of concerns about specific risk factors. On April 14, 2004 (69 FR 19975), the ESU was reclassified as a species of concern.

Adult fall-run Chinook salmon migrate upstream from July through December and spawn in October and November (Moyle 2002), with the greatest spawning activity typically occurring in November and early December. Late fall-run Chinook salmon adults migrate upstream through the Delta from November through May and spawn from January through April. The success of fall-run Chinook salmon spawning is dependent, in part, on seasonal water temperatures.

After incubating and hatching, the young salmon emerge from the spawning areas as fry. A portion of the fry population migrates downstream soon after emergence, rearing in the downstream river channels and the Delta estuary during spring. The remaining portion of juvenile salmon continues to rear in the upstream systems through spring months until they have adapted to migration into salt water (smolting), which typically takes place between April and early June. In some streams, a small proportion of the fall-/ late fall-run Chinook salmon juveniles may rear through summer and fall, migrating downstream during fall, winter, or early spring as 1-year-old smolts.

EFH has been designated for Central Valley fall-/late fall–run Chinook salmon ESU (NMFS 1998c, 1998d). Fall-/late fall-run EFH includes migration, holding, and rearing habitat for the Sacramento River and several tributaries (63 FR 11481–11519, March 9, 1998). Central Valley fall-/late fall-run Chinook salmon are known to occur in Regions 1-3 of the Phase 1 SERP

coverage area. Critical habitat has not been designated for fall-/late fall-run Chinook salmon because it is not a federally listed species.

### ***Green Sturgeon***

On January 23, 2003, NMFS determined that green sturgeon comprise two populations: a northern and a southern DPS (68 FR 4433–4441). The southern DPS includes populations south of the Eel River to the Sacramento River. The Sacramento River supports the southernmost spawning population of green sturgeon (Moyle 2002). On April 6, 2005, NMFS determined that the northern DPS does not warrant listing under the federal ESA, but it remained on the Species of Concern List (70 FR 17386–17401). On April 7, 2006, NMFS determined that the southern DPS of green sturgeon was threatened and listed it under the federal ESA (71 FR 17757–17766).

Green sturgeon was classified as a Class 1 Species of Special Concern by the California Department of Fish and Game (DFG in 1995 (Moyle et al. 1995). Class 1 Species of Special Concern are those that conform to the state definitions of threatened or endangered and could qualify for addition to the official list. On March 20, 2006, emergency regulations for green sturgeon were put into effect by DFG, requiring a year-round, zero bag limit of green sturgeon in all areas of the state (DFG 2006).

The green sturgeon is anadromous, but it is the most marine-oriented of the sturgeon species and has been found in nearshore marine waters from Mexico to the Bering Sea (71 FR 17757–17766). The northern DPS has included spawning populations in the Rogue, Klamath, and Eel rivers; the southern DPS has a single spawning population in the Sacramento River (71 FR 17757–17766). Adults typically migrate upstream into rivers between late February and late July. Spawning occurs from March to July, with peak spawning from mid-April to mid-June. Green sturgeon are believed to spawn every 3–5 years, although recent evidence indicates that spawning may be as frequent as every 2 years (Moyle 2002). Little is known about the green sturgeon's specific preferences for spawning habitat. Adult green sturgeon are believed to broadcast their eggs in deep, fast water over large cobble substrate, where the eggs settle into the interstitial spaces (Moyle 2002). In the Central Valley, spawning occurs in the Sacramento River upstream of Hamilton City, perhaps as far upstream as Keswick Dam, and possibly in the lower Feather River (Moyle 2002).

Critical habitat for green sturgeon includes portions of the Sacramento River, lower Feather River, lower Yuba River, and Delta portions of the Phase 1 SERP coverage area (74 FR 52300–52348, October 9, 2009). PCEs of critical habitat in the Phase 1 SERP coverage area include (1) freshwater habitats with suitable food resources, substrate, water flow, water quality, migratory corridors, depth, and sediment quality; and (2) estuarine habitats with suitable food resources, water flow, water quality, migratory corridors, depth, and sediment

quality. The conservation value of critical habitat in the Phase 1 SERP coverage area is high because it supports both recruitment and survival of juveniles and adults (74 FR 52300–52348, October 9, 2009).

### ***Delta Smelt***

Delta smelt was federally listed as threatened on March 5, 1993 (58 FR 12854–12863), and critical habitat was designated on December 19, 1994 (59 FR 65256–65278). Population trends and abundance of delta smelt are poorly understood because of their short life span (1 year). Delta smelt occur in Region 1 of the Phase 1 SERP coverage area throughout all of their life stages and have been documented in the Sacramento River up to the city of Sacramento, RM 60 (Moyle 2002). This species historically has been documented as far upstream as RM 78 (Hobbs, pers. comm., 2011). Delta smelt migrate into freshwater channels and sloughs between December and January, and spawn in those locations as late as July; then, during summer, juveniles return downriver into the Delta.

Delta smelt are endemic to the Sacramento–San Joaquin estuary and are found seasonally in Suisun Bay and Suisun Marsh. They typically are found in shallow water (less than 10 feet) where salinity ranges from 2 to 7 parts per thousand (ppt), although they have been observed at salinities between 0 and 18.4 ppt. Delta smelt have relatively low fecundity and most live for 1 year. They feed on planktonic copepods, cladocerans, amphipods, and insect larvae. Delta smelt are semi-anadromous. During their spawning migration, adults move into the freshwater channels and sloughs of the Delta between December and January. Spawning occurs between January and July, with peak spawning from April through mid-May (Moyle 2002).

Critical habitat for delta smelt consists of all water and all submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay (including the contiguous Grizzly and Honker bays); the length of Goodyear, Suisun, Cutoff, First Mallard (Spring Branch), and Montezuma Sloughs; and the contiguous waters in the Delta (59 FR 65256–65278, December 19, 1994). Critical habitat for delta smelt is designated in the California counties of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo. PCEs of critical habitat determined to be essential to the conservation of the species include the physical habitat, water, river flow, and salinity concentrations required to maintain delta smelt habitat for spawning, larval and juvenile transport, rearing, and adult migration (59 FR 65256–65278, December 19, 1994). Delta smelt could occur in Region 1 of the Phase 1 SERP coverage area.

### ***Longfin Smelt***

Longfin smelt (*Spirinchus thaleichthys*) is a federal species of concern and a California-listed threatened species. A petition to list the longfin smelt under the federal ESA was submitted to

USFWS in 2007, and in 2009 USFWS determined that a DPS was not warranted and began a status review of the entire species range.

Longfin smelt can tolerate a broad range of salinity concentrations, ranging from fresh water to seawater. Spawning is believed to occur in the Sacramento and San Joaquin rivers and adjacent sloughs. Spawning may take place as early as November and may extend into June, with the peak spawning period occurring from December to April. Adult longfin smelt are found mainly in Suisun, San Pablo, and San Francisco bays, although their distribution is shifted upstream into the western Delta in years of low outflow (Moyle 2002).

Longfin smelt are more broadly distributed throughout the Delta and are found at higher salinities than delta smelt. During non-spawning periods, longfin smelt are most often concentrated in Suisun, San Pablo, and North San Francisco bays (Moyle 2002). Longfin smelt could occur in the Phase 1 SERP coverage area in Region 1 during their spawning season.

### ***River Lamprey***

River Lamprey is designated by CDFW as a species of special concern. River lamprey is an anadromous species that migrates into streams, including tributaries of the Sacramento River, between July and October. Spawning takes place the following spring. Spawning habitat is characterized by low-gradient reaches with gravel and sandy bottoms. After young hatch, they burrow into sediments and filter feed. River lamprey could occur in Regions 1–3 of the Phase 1 SERP coverage area in suitable habitats.

### ***Hardhead***

Hardhead is designated by CDFW as a species of special concern. Hardhead is a large cyprinid fish that occupies low-elevation to mid-elevation streams in the Sacramento and San Joaquin River drainages. Hardhead is typically found in undisturbed areas, with deep pools and runs, in areas that have warm summer temperatures exceeding 68°F (Moyle 2002). Large, warm streams with deep pools, rocky substrate, low turbidities, and low water velocities are preferred. Spawning takes place in April and May, and while some fish from large rivers or reservoirs migrate upstream to spawn, others may have only short spawning migrations. Once widespread and abundant in California, hardhead have become increasingly isolated into foothill streams that are free of introduced species and human activity. Hardhead could occur throughout the Phase 1 SERP coverage area.

### ***Sacramento Splittail***

Sacramento splittail was previously listed under the ESA as a threatened species; however, USFWS removed the listing in 2003 (68 FR 55140). The Sacramento splittail is currently designated as a CDFW species of special concern. Sacramento splittail are cyprinid minnows that occur in the Delta and Suisun Marsh, and migrate seasonally through the Sacramento

River. Adults move upstream during the onset of winter, from late November to late January. Inundated floodplains provide foraging and spawning habitat, and seasonal migration is tied to the timing of seasonal flooding. Important spawning habitat occurs along the lower Sacramento River in the Sutter and Yolo Bypass areas. Although juvenile Sacramento splittail can remain in upstream areas to rear for a year or more, most move downstream into bay or estuary waters. Sacramento splittail can tolerate both high salinities and low levels of dissolved oxygen. Adult and juvenile Sacramento splittail could occur throughout the Phase 1 SERP coverage area.

### ***Valley Elderberry Longhorn Beetle***

The Valley elderberry longhorn beetle is listed as a threatened species under the federal ESA (45 FR 52803–52806, August 8, 1980). In 2006, USFWS published a 5-year status review for the Valley elderberry longhorn beetle (Talley et al. 2006), which determined that delisting is warranted because many new locations of the beetle have been identified since its listing, destruction of habitat has slowed greatly, and efforts have resulted in the protection of significant acreage of habitat. The Valley elderberry longhorn beetle's range extends from southern Shasta County to Fresno County (Talley et al. 2006). Along the eastern edge of the species' range, adult beetles have been found in the foothills of the Sierra Nevada at elevations up to 2,220 feet, and beetle exit holes have been seen on elderberry plants at elevations up to 2,940 feet. Along the western edge of the species' range, adult beetles have been found on the eastern slopes of the Coast Ranges at elevations of up to 500 feet, and beetle exit holes have been detected on elderberry plants at elevations up to 730 feet (Barr 1991).

Valley elderberry longhorn beetle is found only in close association with its host plant, elderberry (*Sambucus* spp.). Elderberry plants are found in or near riparian and oak woodland habitats. The life history of the Valley elderberry longhorn beetle is assumed to follow a sequence of events similar to those of related taxa. Female beetles deposit eggs in crevices in the bark of living elderberry plants. Presumably, the eggs hatch shortly after they are laid, and the larvae bore into the pith of the trunk or stem. When larvae are ready to pupate, they move through the pith of the plant, open an emergence hole through the bark, and return to the pith for pupation. Adults exit through the emergence holes and can sometimes be found on elderberry foliage, flowers, or stems or on adjacent vegetation. The entire life cycle of the Valley elderberry longhorn beetle is thought to encompass 2 years, from the time eggs are laid and hatch until adults emerge and die (USFWS 1984).

Critical habitat for the Valley elderberry longhorn beetle occurs in two locations near the City of Sacramento (45 FR 52803–52806, August 8, 1980). One area is enclosed by the Western Pacific railroad tracks and State Route 160, approximately 0.5 mile north of the American River near its confluence with the Sacramento River. The second site is located along the south bank of the American River at River Bend Park (formerly Goethe Park), just upstream of RM 13.



There is no critical habitat for Valley elderberry longhorn beetle within the Phase 1 SERP coverage area; however, elderberry shrubs could occur with the Phase 1 SERP coverage area.

### ***Western Pond Turtle***

Western pond turtle is designated by CDFW as a species of special concern. This species prefers permanent or near-permanent aquatic habitats, such as lakes, ponds, streams, freshwater marshes, and agricultural ditches. Because the western pond turtle regulates its body temperature through basking, it requires still or slow-moving water with instream emergent woody debris, rocks, or similar features for basking sites. Pond turtles are highly aquatic but can venture far from water for egg laying. Nests are typically located on unshaded upland slopes in dry substrates with clay or silt soils (Jennings and Hayes 1994). Western pond turtles can overwinter in upland sites. Western pond turtle is known to occur within the Phase 1 SERP coverage area and is likely to occupy suitable habitat in the area if any is present.

### ***Giant Garter Snake***

The giant garter snake is listed as a threatened species under the ESA. Currently, this species is only known from 13 isolated population clusters within the Central Valley, from Chico to an area just southwest of Fresno (58 FR 54053–54067, October 20, 1993). The giant garter snake inhabits agricultural wetlands and associated waterways, including irrigation and drainage canals, rice fields, marshes, sloughs, ponds, low-gradient streams, and adjacent uplands. It has also been observed using revetment as cover. Giant garter snakes are believed to be most numerous in rice-growing regions (USFWS 1999). Giant garter snakes are typically absent from the larger rivers; wetlands with sand, gravel, or rock substrates; and riparian areas lacking suitable basking sites or suitable prey populations (USFWS 1999). The giant garter snake hibernates from October to March in abandoned burrows of small mammals located above prevailing flood elevations (Fisher et al. 1994) and breeds during March and April.

Giant garter snake populations that occur near the Phase 1 SERP coverage area include the Yolo Basin/Willow Slough population near Davis, the American Basin population north of the city of Sacramento and east of the Sacramento River, and the Sutter Basin and Colusa Basin populations. The species has been reported in the Colusa Main Drain, Feather River, Natomas Cross Canal, Wadsworth Canal, Conaway Main Canal, Yolo and Sutter Bypass, and south fork of Putah Creek (CNDDDB 2012); however, in general, the Phase 1 SERP coverage area covers little suitable habitat for giant garter snake because the area contains larger waterways, typified by steep banks and dense, overhanging riparian vegetation. Suitable aquatic habitat for giant garter snake can be found along some portions of Phase 1 SERP coverage area waterways, including the Wadsworth and Cherokee canals; the Colusa, Sutter, and Willow Slough bypasses; and the Colusa main drain. Suitable aquatic habitat for giant garter snake is more likely to exist in areas adjacent to and on the land side of the coverage area, in drainage ditches, irrigation canals, and flooded rice fields. Several observations of giant garter snake

have been made within a few miles of the coverage area reaches, in or around small irrigation drainages, canals, and rice fields (CNDDDB 2012), but these normally occur on the landside of levees.

Critical habitat has not been designated for giant garter snake.

### **Swainson's Hawk**

Swainson's hawk is listed as threatened under the CESA. Historically, Swainson's hawk nested throughout lowland California. As many as 17,000 Swainson's hawk pairs may have nested in California at one time (DFG 1994). Currently, there are 2,081 breeding pairs in California, of which 1,948 are in the Central Valley (Anderson et al. 2007). The overall Swainson's hawk population is considered to be declining (DFG 1994), although individuals in the Central Valley appear to have adapted relatively well to certain agricultural patterns in areas where suitable nesting habitat remains (DFG 1993).

Swainson's hawks typically occur in California only during the breeding season (March through September) and winter in Mexico and South America, although a small number of individuals have been wintering in the San Francisco Bay-Delta for several years (City of Sacramento et al. 2003). The Central Valley population migrates only as far south as Central Mexico. Swainson's hawks begin to arrive in the Central Valley in March. Nesting territories are usually established by April, with incubation and rearing of young occurring through June (DFG 1993).

Swainson's hawk is most commonly found in grasslands, low shrublands, and agricultural habitats that include large trees for nesting. Nests occur in riparian woodlands, roadside trees, trees along field borders, and isolated trees. Stringers of remnant riparian forest along drainages contain the majority of known nests in the Central Valley (England et al. 1997, Estep 1984, Schlorff and Bloom 1984). Nesting pairs frequently return to the same nest site for multiple years and decades. Potentially suitable nesting trees and foraging habitat are found in the Phase 1 SERP coverage area.

### **Yellow Warbler**

Yellow warbler (*Dendroica petechia*) is designated by CDFW as a species of special concern. Yellow warblers typically breed in wet areas with dense riparian vegetation. Breeding habitats primarily are willow patches in montane meadows and riparian scrub and woodland dominated by willow, cottonwood, aspen, or alder with dense understory cover. Localized breeding has been documented in more xeric (dry) sites, including chaparral, wild rose (*Rosa* spp.), thickets, and young conifer stands (Siegel and DeSante 1999, RHJV 2004). Potentially suitable riparian habitat occurs within the Phase 1 SERP coverage area.

### ***White-Tailed Kite***

The white-tailed kite (*Elanus leucurus*) is designated by CDFW as a fully protected species. White-tailed kite occurs and forages year round in the Central Valley in a variety of habitat types, including grasslands, meadows, emergent wetlands, and agricultural areas. Nests are typically constructed on dense oak or willow patches or in trees adjacent to foraging areas. Potentially suitable habitat occurs within the Phase 1 SERP coverage area.

### ***Burrowing Owl***

The burrowing owl (*Athene cunicularia*) is designated by CDFW as a species of special concern. A year-round resident in most of its range in California, burrowing owl primarily inhabits grasslands but will use other habitats with relatively short vegetation that have adequate burrows for roosting and nesting. Mammal burrows, particularly ground squirrel burrows, are the primary source for roosting and nesting locations. Burrowing owls have adapted to increasingly urban environments and will live next to busy roads, even living near airport runways. Burrowing owls feed primarily on insects, small rodents, amphibians, or carrion depending on what is available. Levees in the Phase 1 SERP coverage area provide potential burrowing owl habitat.

### ***Yellow-Breasted Chat***

The yellow-breasted chat (*Icteria virens*) is designated by CDFW as a species of special concern. An uncommon neotropical migrant, the yellow-breasted chat breeds in riparian and marsh habitat in northern California. Preferred habitat includes dense shrubs and complex understory close to water. Dense thickets of brush provide foraging habitat; the yellow-breasted chat gleans insects and other food from trees and shrubs. The yellow-breasted chat constructs nests low to the ground in similar thick vegetation areas. Potentially suitable habitat occurs within the Phase 1 SERP coverage area.

### ***Bank Swallow***

Bank swallow (*Riparia riparia*) is listed as endangered under the CESA. A neotropical migrant, the bank swallow uses riparian and other lowland habitats in California during spring through fall. The bank swallow nests in fine-textured or sandy banks or cliffs along rivers, streams, ponds, or lakes and typically nests in colonies. Potentially suitable habitat occurs within the Phase 1 SERP coverage area where levees have bluff-like qualities.

### ***Western Red Bat***

Western red bat (*Lasiurus blossevillei*) has a broad distribution, ranging from British Columbia, Canada, to Chile. In California, western red bat is designated by CDFW as a species of special concern. Suitable habitat includes edge habitats adjacent to streams or open fields, orchards,

and sometimes urban areas. Roost sites are generally hidden from view in all directions; lack obstruction beneath, allowing the bat to drop downward for flight; lack lower perches that allow visibility by predators; have dark ground cover to minimize solar reflection; have nearby vegetation to reduce wind and dust; and are generally located on the south or southwest side of a tree. They may have an association with intact riparian habitat, particularly willows, cottonwoods, and sycamores. Potentially suitable habitat occurs within the Phase 1 SERP coverage area.

### **Sensitive Natural Communities**

Sensitive natural communities are plant communities that are of special concern to resource agencies or are afforded specific consideration through CEQA, section 1602 of the California Fish and Game Code, section 404 of the federal CWA, and the State's Porter-Cologne Act. Sensitive natural communities may be of special concern to agencies and conservation organizations for a variety of reasons, including their diversity, locally or regionally declining status, or because they provide important habitat to common and special-status species.

Many of these communities are tracked in the CNDDDB. Riparian forest and riparian scrub/shrub communities qualify as sensitive natural communities while the riparian herbaceous community generally does not. Sensitive natural communities present in the Phase 1 SERP coverage area consist of riparian forest, riparian scrub/shrub, and emergent marsh.

### **Wetlands and Other Waters of the United States**

Several of the waterways within the defined Phase 1 SERP coverage area, including the Sacramento and Feather rivers and their tributaries and sloughs, qualify as jurisdictional waters of the United States under section 404 of the CWA.

## **3.3.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

### **THRESHOLDS OF SIGNIFICANCE**

Based on Appendix G of the CEQA Guidelines, the SERP would result in a significant impact on biological resources if it would:

- ▶ have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW, USFWS, or NMFS;
- ▶ have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW, USFWS, or NMFS;

- ▶ result in a substantial loss of riparian forest land or conversion of riparian forest to non-forest use;
- ▶ have a substantial adverse effect on federally protected wetlands as defined by CWA section 404 (including but not limited to marsh, vernal pool, coastal) through direct removal, filling, hydrological interruption, or other means;
- ▶ interfere substantially with the movement of any native resident or migratory fish or wildlife species or established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- ▶ substantially conflict with any applicable local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- ▶ conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

## **IMPACTS NOT DISCUSSED FURTHER IN THIS EIR**

### **Special-status Species**

Section 3.3.2, “Environmental Setting,” discusses all special-status plant, fish, and wildlife species evaluated in this analysis, and Tables 3.3-1, 3.3-2, and 3.3-3 summarize the potential for each of these species to occur in the wider study area. Those plant, wildlife, and fish species not expected or with a low probability to occur (because of a lack of suitable habitat, lack of other occurrence records, or range limitations that place the Phase 1 SERP coverage area outside the known range of the species) are not addressed further in this analysis. Implementation of Phase 1 of the SERP is not expected to affect those species.

### **Fish and Wildlife Movement**

The SERP Manual contains conservation measures to be applied to all SERP projects, including resource-specific conservation measures for sensitive biological resources and special-status fish and wildlife species. Among the required conservation measures are timing restrictions for in-channel work to avoid impacts on seasonally present and migratory fish and wildlife species (see Section I in Appendix B). Therefore, impacts on movement and movement corridors are not addressed further in this analysis.

### **Forestry Resources**

Because forest land within the SERP coverage area is limited to small patches of riparian forest, and there is no timberland within the SERP coverage area, the SERP would not conflict with existing zoning or cause rezoning of forest land, timberland, or timberland zoned

Timberland Production. For the same reason, loss or conversion of forest land, not including riparian forest, would not occur. Therefore, these impacts are not addressed further in this analysis.

## ANALYSIS METHODOLOGY

The impact analysis for biological resources examines temporary, short-term, and long-term effects of the SERP. Temporary effects could occur over hours, days, or up to 4 weeks during active construction. In addition, the river system is expected to experience minor adjustments after construction, so analysis of temporary impacts also looks at interim effects that might occur during the first few years after construction (i.e., short-term effects). Long-term effects are the result of changes to the riverbank and associated riparian corridor and include changes to habitat conditions over a period of time after each erosion site has responded and achieved a new dynamic equilibrium.

## IMPACT ANALYSIS

**IMPACT 3.3-1** ***Temporary Effects to Fish and Aquatic Habitat Resulting from Construction.** SERP construction activities could result in temporary adverse effects on water quality, aquatic habitats, and the aquatic community. However, the SERP Manual includes conservation measures that would be implemented to avoid and/or minimize temporary adverse effects that could otherwise result from construction. This impact would be **less than significant**.*

SERP construction activities would be limited to specific erosion sites that meet the criteria described in the SERP Manual (see Section B, “Baseline Assessment Methodology,” of the SERP Manual in Appendix B of this EIR). The maximum area that would be disturbed by equipment during construction for any site is 0.1 acre with a maximum linear foot limit of 264 feet (Tier 1), or 0.5 acre with a maximum linear foot limit of 1,000 feet (Tier 2). A separation of 500 feet between sites repaired in the same year would be required, and a maximum of 15 sites would be repaired per year. Because of the size of these projects, impacts on habitat would be isolated and small, relative to the 306-mile extent of the Phase 1 SERP coverage area.

Potential impacts on water quality include sedimentation and turbidity and potential release and exposure of contaminants (see Section 3.6, “Hydrology and Water Quality,” for more information). Construction activities could disturb instream sediments and soils adjacent to individual erosion sites. Reduced fish population levels and survival rates have been linked to elevated turbidity levels and silt deposition (Harrington and Born 2000).

The potential also exists for contaminants such as fuels, oils, other petroleum products, and various chemicals used in construction activities to be accidentally introduced into the water system, either directly through spills or incrementally through surface runoff, from work within

or immediately adjacent to the channel. In sufficient concentrations, these contaminants would be toxic to fish occupying habitats in the coverage area.

The SERP Manual contains mandatory conservation measures to be applied to all SERP projects, and resource-specific conservation measures to address impacts on fish and aquatic habitat. These conservation measures include timing restrictions for in-channel work to avoid impacts on seasonally present fish species; restrictions on vegetation and habitat disturbance; specific direction for construction, equipment, staging, material stockpiling, erosion control during construction, and hazardous materials; and other mandatory or resource-specific conservation measures as detailed in Section I, "Conservation Measures," of the SERP Manual (see Appendix B).

With implementation of the conservation measures in the SERP Manual, potential temporary adverse effects on fish habitat would be avoided and/or minimized. During review of the notification package for each year's sites, the SERP permitting agencies would have the ability to determine that additional conservation measures should be implemented in the event that circumstances require such treatment. Therefore, this impact would be less than significant.

No mitigation is required.

**IMPACT 3.3-2** ***Temporary Construction-Related Disturbance or Loss of Special-Status Fish or Wildlife Species and Habitats.** SERP activities could result in the loss of individuals or nests or cause disruptions to nesting, spawning, or migration of the 20 special-status species known to occur or with a moderate or high potential to occur in the Phase 1 SERP coverage area. Portions of the Phase 1 SERP coverage area include habitat for special-status fish and other aquatic species; construction activities could temporarily degrade these habitats. However, the SERP Manual includes conservation measures that would be implemented to avoid and/or minimize disturbance or loss of species or habitat that could otherwise result from construction. This impact would be **less than significant**.*

A total of 10 special-status fish and 10 special-status wildlife species are known to occur or have a moderate to high potential to occur in the Phase 1 SERP coverage area. See Section 3.3.3 and listed in Table 3.3-3.

Construction activities at erosion repair sites within the Phase 1 SERP coverage area could result in water quality degradation, including sedimentation and turbidity, and potential release of contaminants (see Impact 3.3-1). Water quality degradation could affect special-status fish or other aquatic species, if the species occur in the project vicinity. Construction activities could also result in the loss of individuals, nests, or habitat for the 20 special-status species.

To address potential impacts on special-status fish and wildlife species that could result from construction activities, SERP projects must implement mandatory conservation measures, including timing restrictions for in-channel work to avoid impacts on seasonally present fish species; restrictions on vegetation and habitat disturbance; specific direction for construction, equipment, staging, material stockpiling, erosion control during construction, and hazardous materials; and other mandatory or resource-specific conservation measures (see Section I, “Conservation Measures,” of the SERP Manual in Appendix B of this EIR).

The SERP Manual provides specific conservation measures applicable to sensitive biological resources including giant garter snake, Valley elderberry longhorn beetle, delta smelt, Swainson’s hawk, burrowing owl, bank swallow, nesting birds/migratory birds, raptors, woody shaded riverine habitat, and anadromous fish (see Section I, “Conservation Measures,” of the SERP Manual in Appendix B of this PEIR). In combination with timing restrictions, these conservation measures address the potential impacts of construction on special-status fish and wildlife species that could occur with implementation of the SERP.

The implementation of these conservation measures would avoid or minimize potential temporary adverse effects on special-status fish and wildlife species and their habitat to a less-than-significant impact.

No mitigation is required.

**IMPACT 3.3-3**    ***Long-Term Effects to Special-Status and Common Fish and Wildlife and Habitats.*** *The SERP (Phase 1) would result in long-term beneficial effects for fish, wildlife, and their habitats by preventing further habitat degradation from erosion at small sites along SRFCP levees and substantially reducing the potential for a more major disturbance such as bank failure. This effect would be beneficial.*

In most cases, small erosion sites if left alone expand over time with high water events. They can dramatically expand, putting public safety at risk and jeopardizing adjacent riparian habitat. In most cases, erosion sites are a detriment to habitat for most fish and aquatic species because of high sedimentation rates, lack of cover (shade riverine aquatic), and degraded habitat conditions. The SERP would repair small erosion sites and restore habitat in those areas, where feasible.

The SERP streamlines the permit process so more small erosion sites, up to 15 per year for 5 years, can be repaired. The SERP includes a set of seven design templates to be used based on sensitive biological resources, including special-status fish and wildlife species (see Section C, “Project Design Templates and Construction Details,” of the SERP Manual in Appendix B). The SERP would repair small erosion sites and enhance habitat in those areas, where feasible. This long-term effect would be beneficial.



No mitigation is required.

**IMPACT 3.3-4** ***Loss or Disturbance of Special-Status Plant Species and Habitats.** The SERP could result in mortality of individuals of the seven special-status plant species with moderate or high potential to occur in the Phase I SERP coverage area. Portions of the Phase I SERP coverage area include habitat for special-status plant species and construction activities could temporarily degrade these habitats. However, the SERP Manual includes conservation measures that would be implemented to avoid and/or minimize disturbance or loss of species or habitat that could otherwise result from construction. This impact would be **less than significant**.*

Seven special-status plant species associated with marsh or riparian habitat types have moderate to high potential to occur in the Phase 1 SERP coverage area. These species, their listing status, habitat requirements, and potential to occur are discussed in Table 3.3-1. Erosion repairs could result in the direct removal of individuals or damage that causes eventual mortality of individuals. For example, plants could get broken, bent, or trampled, their roots could be damaged, or their habitat could be modified so that it is no longer suitable to sustain the species. Examples of habitat modifications that could lead to mortality or reduced vigor of special-status plants include hydrologic modifications that result in a site becoming too wet or too dry, soil compaction, installation of rock riprap, and water or soil contamination. Special-status plants could also be adversely affected by the introduction or spread of invasive plant species or by efforts to eradicate or control invasive plants.

The SERP Manual provides mandatory conservation measures to protect sensitive biological resources, including restrictions on vegetation and habitat disturbance and specific direction for construction equipment staging, material stockpiling, erosion control during construction, and hazardous materials (see Section I, “Conservation Measures,” of the SERP Manual in Appendix B). Disturbance to existing grades and vegetation will be limited to the minimum necessary to accomplish the necessary repairs. When repair work is completed at a given site, waterway contours and flows will be returned as close as possible to pre-erosion, preconstruction conditions. Measures to prevent soil or water contamination are also included in the conservation measures. Potential impacts on special-status plants and their habitats would be further minimized because the erosion repair sites would be limited to a maximum disturbance footprint and would be separated both spatially and temporally (a minimum of 500 feet is required between Tier 1 sites repaired in the same year and a maximum of 15 sites would be repaired per year (see Section B, “Baseline Assessment Methodology,” of the SERP Manual in Appendix B).

With implementation of the SERP Manual’s conservation measures, potential adverse effects on special-status plant species and their habitats would be avoided or minimized. This impact would be less than significant.

No mitigation is required.

**IMPACT 3.3-5** ***Discharge of Dredged or Fill Material into Jurisdictional Waters of the United States.** The SERP could result in permanent or temporary fill of waters of the United States. However, the SERP Manual includes conservation measures that would be implemented to avoid and/or minimize such discharges and the resulting disturbance of special-status habitats. In addition, DWR is requesting a regional general permit from USACE for activities under the SERP, and the conservation measures include measures typically required as special conditions of such a permit. This impact would be **less than significant**.*

Erosion repair activities may involve grading and recontouring within the ordinary high-water mark of waters of the United States. As a result, fill materials would be discharged into waters of the United States and/or waters of the state. In addition to direct fill, indirect impacts on water quality could result from the transport of pollutants and sediment in runoff from SERP construction sites. The SERP Manual contains mandatory conservation measures to be applied to all SERP projects to minimize and avoid impacts on waters of the United States and waters of the state. These measures include timing restrictions for work within and adjacent to active stream channels, and measures that specifically direct equipment staging, material stockpiling, and erosion control to maximize protection of water quality. Other mandatory conservation measures include prohibiting placement of materials that would impair flow of surface water into or out of any wetland area; prohibiting placement of fill material other than silt-free gravel or riprap into live streams; treating water through filtration or retention pond settling before release into live streams; and removing materials, trash, and debris from the construction site immediately upon completing work. Disturbance areas would be limited to the minimum necessary to accomplish the necessary repair. When repair work is completed at a given site, waterway contours and flows would be returned as close as possible to pre-erosion, preconstruction conditions (see Section I, "Conservation Measures," of the SERP Manual in Appendix B).

In addition, the SERP would be implemented in coordination with USACE. DWR is seeking to obtain a regional general permit (RGP) from USACE for compliance with section 404 of the CWA. Compliance with section 401 of the CWA would be achieved through development of a programmatic 401 water quality certification from the Central Valley RWQCB. Agencies with regulatory authority over the SERP, including USACE and the Central Valley RWQCB, would be notified by June 1 of each year of the erosion repair projects proposed for SERP authorization that year, as described in Section F, "Notification Requirements," of the SERP Manual. The notification packet would provide individual project application materials, including a wetland delineation, if applicable, and would identify any impacts on waters of the United States, including wetlands, that would result from each individual project. Where impacts on waters of the United States would result from SERP activities, USACE may request additional

conservation measures to mitigate the impacts. Activities conducted under the SERP will comply with all terms and conditions of the RGP.

Additionally, as described in Section G, “Mitigation,” of the SERP Manual, erosion repair sites will be monitored to determine whether vegetation plantings incorporated into the design would fully restore pre-erosion biological functions. If final success criteria provided in Section H, “Monitoring and Success Criteria,” of the SERP Manual are not met, contingency actions or compensatory mitigation would be identified.

Compliance with the terms of the RGP; implementation of the SERP Manual size and placement limits described in Section B, “Baseline Assessment Methodology”; the mitigation requirements described in Section G, “Mitigation”; and the mandatory conservation measures described in Section I, “Conservation Measures,” would ensure that potential adverse effects on waters of the United States and waters of the state would be avoided or minimized. This impact would be less than significant.

No mitigation is required.

**IMPACT 3.3-6** ***Temporary Loss or Degradation of Riparian Habitat/Forest or Other Sensitive Natural Communities.** The SERP could result in removal of surrounding riparian or marsh vegetation. Construction activities could temporarily or permanently degrade riparian or marsh habitat. However, the SERP Manual includes conservation measures that would be implemented to avoid and/or minimize loss or degradation of riparian or marsh vegetation that could otherwise result from construction. In addition, DWR is requesting a streambed alteration agreement memorandum of agreement from CDFW for activities under the SERP, and the conservation measures include mitigation typically required by such a permit. This impact would be **less than significant**.*

Erosion repairs could result in vegetation removal in riparian and marsh plant communities, which are considered sensitive natural communities by CDFW and are protected under section 1602 of the California Fish and Game Code. In addition to direct vegetation removal, repair actions could degrade surrounding riparian or marsh habitat by altering hydrology, damaging tree and shrub roots, altering soil conditions, installing rock riprap in areas previously vegetated with riparian or marsh plants, releasing contaminants into the soil or water, and introducing or spreading invasive plant species.

The SERP Manual provides mandatory conservation measures to protect sensitive biological resources, including restrictions on vegetation and habitat disturbance (see Section I, “Conservation Measures,” of the SERP Manual in Appendix B). Disturbance or removal of vegetation would not exceed the minimum necessary to complete operations. Work would be done in such a manner that, to the extent feasible, native riparian vegetation within the vegetation-clearing zones would be avoided and left undisturbed. When repair work is

completed at a given site, waterway contours and flows would be returned as close as possible to pre-erosion, preconstruction conditions. Areas with vegetation that are disturbed by project activities will be replanted as specified in the SERP Manual, Appendix B. Measures to prevent soil or water contamination are also included in the conservation measures.

In addition to mandatory conservation measures to protect water quality and habitat, the SERP Manual provides specific conservation measures to protect sensitive biological resources and woody shaded riverine habitat that further reduce potential adverse effects on riparian and marsh communities by requiring awareness training focusing on sensitive biological resources, fencing of sensitive biological resources, biological monitoring as needed during construction, and avoidance of woody riparian vegetation to the extent feasible. Woody riparian and shaded riverine habitat will be replaced at a 3:1 ratio on an area or linear-foot basis, as determined appropriate by DWR in coordination with NMFS (see Section I, "Conservation Measures," of the SERP Manual in Appendix B).

The SERP would be implemented in coordination with CDFW. DWR submitted an application for section 1600 Notification of Lake or Streambed Alteration Application package on October 4, 2011, for the SERP Program. .

Compliance with the terms of the streambed alteration agreement issued for the SERP; implementation of the SERP Manual size and placement limits described in Section B, "Baseline Assessment Methodology"; the mitigation measures described in Section G "Mitigation"; and the conservation measures described in Section I, "Conservation Measures," would help DWR to avoid or minimize potential adverse effects on sensitive natural communities, including riparian forest habitat. This impact would be less than significant.

No mitigation is required.

**IMPACT 3.3-7** ***Long-Term Effects on Riparian Habitats/Forests.** The SERP would result in long-term beneficial effects on riparian habitats by planting or enhancing native riparian vegetation, preventing further degradation from erosion, and reducing the risk for a more major impact such as bank failure. This effect would be **beneficial**.*

The SERP would repair small erosion sites and restore, and enhance habitat in those areas, where feasible. Planting and site-specific restoration design would be tailored to each repair site and to the habitat present at the repair site (see Section C, "Project Design Templates and Construction Details," of the SERP Manual in Appendix B).

Repair sites would be returned as close as possible to pre-erosion conditions. The sites would be monitored for 5 years and be required to meet success criteria, including final success criterion of 80 percent cover by planted and seeded native species.

The SERP is also part of the 2012 Central Valley Flood Protection Plan (CVFPP) (DWR 2012), which includes an associated Conservation Framework (Attachment 2, DWR 2012). Levee vegetation management practices and procedures are an important component of the CVFPP. Through management actions set forth in the CVFPP and associated Conservation Framework, DWR proposes to implement a flexible and adaptive integrated vegetation management strategy (VMS) that would meet public safety goals and protect and enhance sensitive habitats in the Central Valley.

To sustain important habitat, the CVFPP levee VMS would retain lower waterside vegetation below the vegetation management zone (see Figures 3.3-1 and 3.3-2). Similar figures appear in Section C, "Project Design Templates and Construction Details," of the Final SERP Manual in Appendix B, but are outdated and will be updated accordingly. Vegetation would be removed (in coordination with resource agencies) only when it presented an unacceptable threat. In addition to protecting existing vegetation, flood management actions would promote the development of, appropriate vegetation for erosion control on the waterside slope, outside of the vegetation management zone.

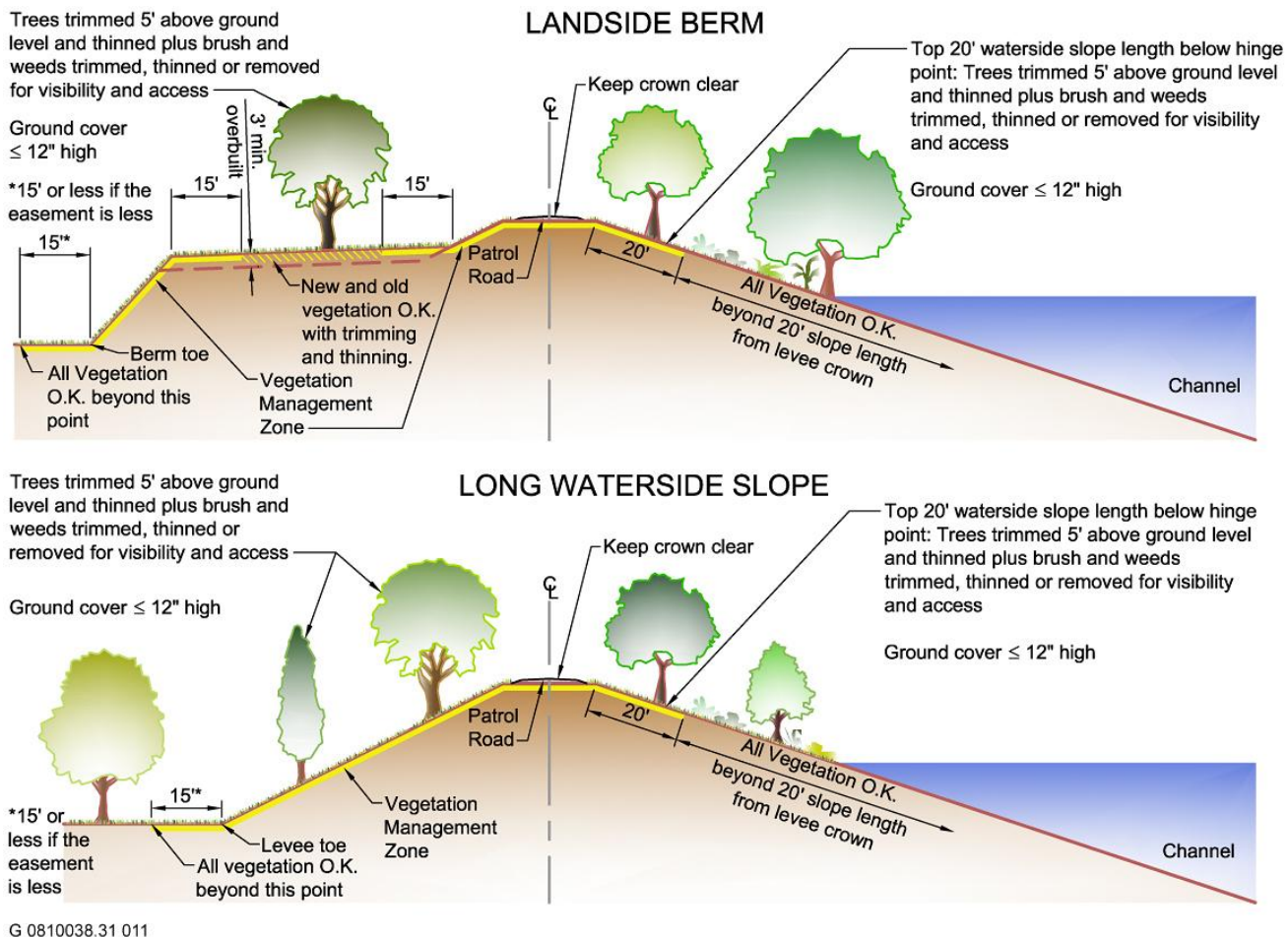
The SERP Manual design templates take into consideration riparian habitats and other sensitive biological resources. These design templates, in conjunction with the revegetation, recontouring, monitoring, and success criteria, would help DWR to implement erosion repair projects that will return levees to pre-erosion conditions and also take into account existing riparian habitat within the Phase 1 SERP coverage area. Implementation of the CVFPP Conservation Framework would further reduce impacts to riparian habitat/forests on levees. Therefore, this impact would be less than significant.

No mitigation is required.

**IMPACT 3.3-8** ***Conflict with Tree Preservation Ordinances.** The City of Sacramento and several counties within the Phase I SERP coverage area have tree preservation ordinances that prohibit the removal of native oak trees without a tree removal permit. This impact would be **less than significant**.*

Erosion repair actions could result in vegetation removal in areas containing native oak trees protected under county or city ordinances. Removal of trees protected under county or city ordinances (usually trees measuring 6 inches or greater in diameter at breast height [dbh]) typically requires the removing party to obtain a permit from the county or city and mitigate for the loss of protected tree(s). In addition, several of these municipalities have general plan policies that call for the preservation of native riparian vegetation.

The SERP Manual provides mandatory conservation measures to avoid removal of or damage to native trees 3 inches dbh or larger, a standard stricter than most tree preservation



G 0810038.31 011

Source: AECOM 2013

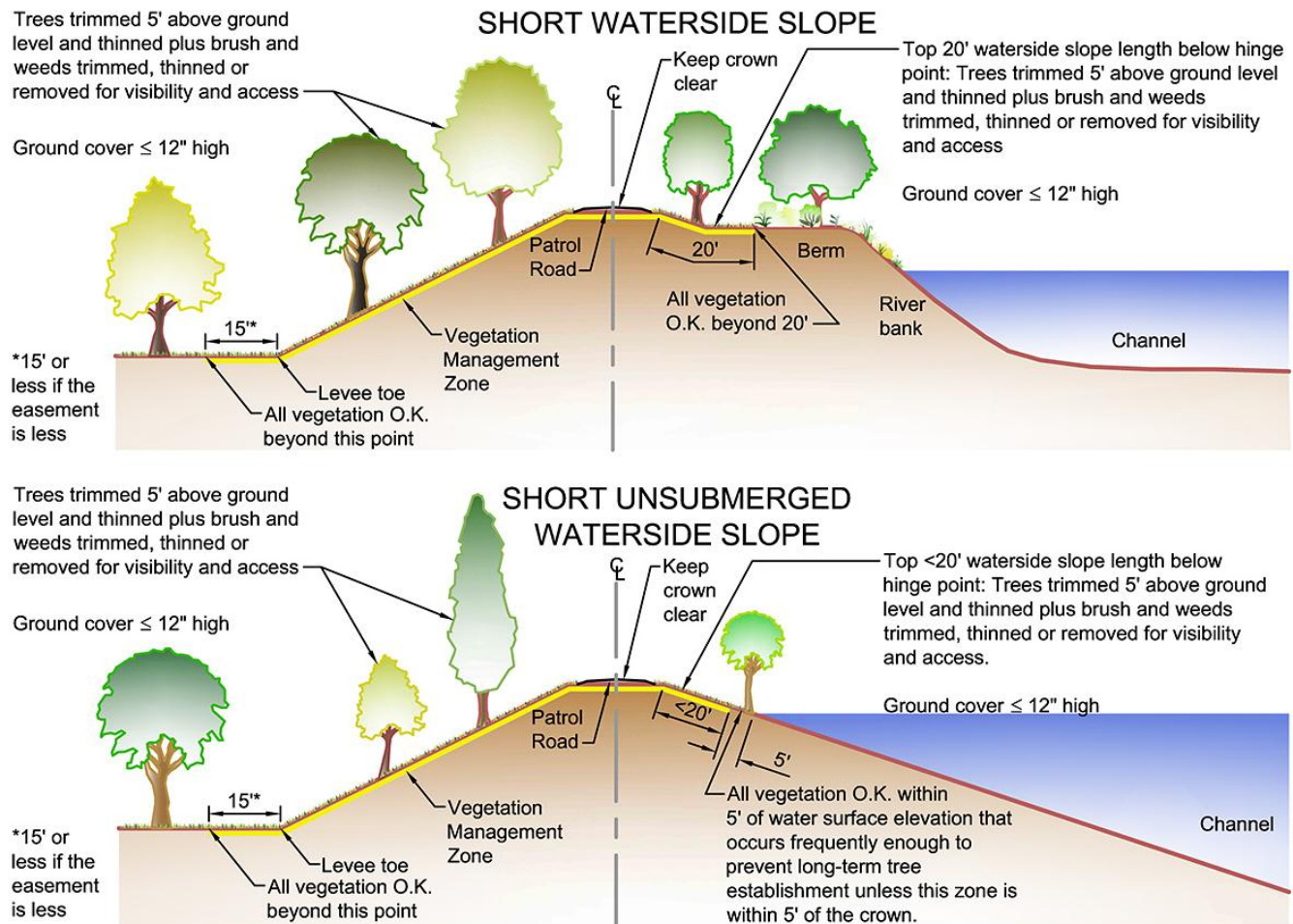
**Figure 3.3-1**

### **Vegetation Management for Existing Levees – Long Waterside Slopes and Landside Berm**

ordinances. Native riparian vegetation within the erosion repair sites would be avoided and left undisturbed where this can reasonably be accomplished without compromising flood protection efforts and, basic engineering design and safety. In addition, it is common for city and county general plans to include exemptions to the tree preservation ordinances for trees that need to be removed for public safety reasons. However, if removal of one or more protected trees is necessary for public safety reasons, DWR would coordinate with CDFW, USFWS, and NMFS, and the applicable municipalities prior to removal of protected trees. DWR would also obtain and comply with the terms of a streambed alteration agreement as described under Impact 3.3-6.

Compliance with the terms of the CDFW streambed alteration agreement, and implementation of the SERP Manual conservation measures described in Section I, "Conservation Measures," of the SERP Manual, would help DWR to avoid or minimize potential adverse effects on trees





G 0810038.31 012

Source: AECOM 2013

**Figure 3.3-2 Vegetation Management of Existing Levees – Short Waterside Slope and a Short Waterside Slope Above the Water Surface Elevation that Frequently Submerges the Lower Waterside Slope**

and riparian vegetation protected under local ordinances and policies. This impact would be less than significant.

No mitigation is required.

**IMPACT 3.3-9** ***Conflict with an Adopted Habitat Conservation Plan.** Several of the counties within the Phase I SERP coverage area have habitat conservation plans in development. However, none of these plans have been adopted. The SERP would not interfere with the implementation success of any of the draft HCPs. There would be **no impact**.*

Consistency of the SERP with the habitat conservation plans (HCPs) currently being developed for the various counties in the Phase 1 SERP coverage area cannot be evaluated under CEQA because these HCPs have not been finalized and adopted, and therefore are

subject to potentially substantial change. However, conservation measures provided in Section I, "Conservation Measures," of the SERP Manual to avoid and minimize impacts on sensitive biological resources, as discussed in Impacts 3.3-1 through 3.3-8, as well as limits on the size, spacing, and timing of repairs, would reduce all potential impacts on sensitive species and habitats to a less-than-significant level. Implementing the SERP would not substantially reduce the viability of target species, reduce habitat value, interfere with the management of conserved lands, or eliminate opportunities for conservation actions. Therefore, based on the information known at this time about HCPs currently under development, there would be no impact.

No mitigation is required.

### **3.3.5 RESIDUAL IMPACTS**

With implementation of the conservation measures included in the SERP Manual, all impacts on biological resources are less than significant. There are no significant and unavoidable impacts on biological resources.